TIMBER RESOURCES AND THE MANUFACTURE

AND

METHODS OF MARKETING LUMBER

IN THE

UNITED STATES

BY

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CONTENTS.

Chapter III.

Chapter IV.

Chapter V.

LIST OF TABLES.

LIST OF CHARTS.

INTRODUCTION.

This is primarily a study of the timber resources of the United States and the methods of distribution of the manufactured product. It is not intended to be a theoretical analysis but a practical treatment of a practical subject which should be of interest to every one of us today, considering our dependence upon the lumber industry. As a manufacturing industry, it ranks third in the United States, but when we consider all the allied industries which are dependent upon it, it holds first place. With the threatened depletion of the supply of raw material for this great industry, there must be concerted action by all parties concerned to preserve it. Our economic welfare depends to a great extent upon it.

There is a slight deviation from the usual method of treatment of such a subject and, in addition to the giving of statistics and the bare statement of facts, an attempt is made to give reasons for conditions as they exist and a forecast as to what may be expected in the future. The stages and processes through which the lumber passes, from the standing timber to the finished product, are discussed, with the economic consideration of the factors governing values and prices. The timber holder,

the manufacturer, the wholesaler, the retailer, and the consumer are each considered and his control and effect on the economic conditions estimated.

Some of the principal points treated are:

I. Our forest resources and their utilization in the past.

2. The present concentration of timber holdings.

3. Reforestation and conservation of our timber resources.

4. Methods and factors of distribution.

5. Combinations and their effect, if any, upon prices.

6. Government control and regulation under anti-trust law.

CHAPTER I.

STANDING TIMBER IN THE UNITED STATES.

The forests of the United States may be divided into five sections according to their location as follows: the Northern, the Central or Hardwood, the Southern, the Rocky Mountain, and the Pacific. The Northern section is sometimes subdivided into: the Northeastern and the Lake State forests. The Northern, Central, and Southern forests originally comprised about three- fourths the wooded area of the United States. The east front extended from Maine to Florida stretching westward to and beyond the Mississippi - indented on the west by Illinois and Iowa prairies, compassing to the northwestward the Great Lake System and ending only at the valley of the Red River of the North. Southwestward, the wooded regions extended to eastern Texas; covering all of Arkansas, most of Missouri, and parts of Iowa and Kansas. Part of this area was of small growth but most of it was covered with dense, fine timber. The Central forest contains broad-leaved deciduous trees, mixed with little or no coniferous growth. In the Northern and Southern forests are found coniferous timber- white pine being in the North and yellow pine in the South. The white pine belt covered Maine; Northern New Hampshire, Vermont, and New York; all but the souther-

most part of Michigan and the north half of Wisconsin and Minnesota. The yellow pine belt took in New Jersey and, running south, grew broader covering the east third of Virginia, most of the Atlantic and Gulf States, southern Arkansas, and southeastern Texas.

The soil and climate of the Central forest area being well adapted to the growth of agricultural products, caused the early destruction of the Hardwoods. This forest contained two hundred and thirty varieties of broad-leaved deciduous trees, 72 per cent of which had a commercial value.

Conifers prevail on the Pacific Coast, and in that forest the density and average quantity of timber per acre is the greatest in the world. It has its maximum density and width in Washington and Oregon and dwindles to small areas in south-central California. Douglas or red fir is almost equal to all other varieties in quantity but with this are found white and yellow pine, red and other cedars, a variety of spruces and firs, and western hemlock. Beginning at the south line of Oregon is the California red wood running south to and below San Francisco. Sugar pine, much like the white pine of the Northern forest, is also abundant here.

The Lumber Industry of America"- Milton O. Nelson.
Review of Reviews, Vol. 36: 561 - 570.

MAP OF THE ORIGINAL FOREST AREAS OF THE UNITED STATES.

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NORTHERN FOREST

PACIFIC FOREST

ROCKY MOUNTAIN FOREST

HARDWOOD or CENTRAL FOREST

SOUTHERN FOREST

TROPICAL FOREST

Recopied from the Report of the U.S. Conservation Commission 1908 - 1909.

The unshaded areas are treeless except along the streams.

RAND, McNALLY & CO.'S
OUTLINE MAP OF THE
UNITED STATES.
AMERICAN SERIES.

Rand, McNally & Co., Engravers and Publishers,
160 - 174 Adams Street, Chicago.

SCALE OF STATUTE MILES.
0 50 100 150 200 250 300

Longitude West 95° from Greenwich.

Rand, McNally & Co.'s Outline Map of the United States. American Series. Copyright, 1902, by Rand, McNally & Co.

Section 2. Concentration of Holdings.

Only forty years ago at least three-fourths of the timber now standing was publicly owned. The great bulk of it passed from public to private hands through (a) enormous railroad, canal and wagon road grants by the Federal Government; (b) direct Government sales in unlimited quantities at $I.25 per acre; (c) certain public-land laws, great tracts being assembled in spite of the legal requirements for small holdings. These laws are wholly inappropriate to forest regions but they still largely remain in force. Though intended to distribute the land in small tracts as homes for freeholders, they actually furthered timber concentration in large holdings. The I,802 largest timber holders now have 79,092,000 acres of timber land and, in addition, some of these holders own I0,652,000 acres lying in timbered parts but not now bearing merchantable timber.

The former Chief of Field Service of the General Land Office, H. H. Schwartz, stated officially (I909) that the timber and stone act-

> "has resulted in the sale of over I2,000,000 acres of valuable timber lands of which fully I0,000,000 acres were transfered to corporate or individual timber land investors by the entrymen. These lands brought to the people or general Government a gross sum of thirty million dollars. At the date of sale they were reasonably worth 240,000,000 dollars. The profit of over 200,000,000 dollars went, not

> to the needy settler engaged in subduing the wilderness, but to the wealthy investors. Not over a fractional part of one per cent of the timber purchased from the United States under this act is held, consumed, or even cut by the men and women who made the entries".

Another effective illustration of what has happened under our land laws appears in the report of the United States Forester for I9I0:

> "An investigation emphasizes the probability that heavily timbered lands, if opened to entry, would pass into the hands of large owners of timber. Of 705,000 acres eliminated from the Olympic National Forest in I900 and I90I, on the ground that the land was chiefly valuable for agriculture and that the settlement of the country was being retarded, 523,720 acres passed ultimately into hands of owners who are holding it purely as a timber speculation. Three companies and two individuals own over I78,000 acres, in holdings of from I5,000 to over 80,000 acres each. Of timbered homestead claims on the eliminated area, held by one hundred settlers, the total area under actual cultivation is only 570 acres, an average of but 5.7 acres to each claim. It will be seen that the original purpose of the elimination was defeated and that bonified settlement was not materially advanced".

In the Pacific-Northwest, there is greater concentration of private holdings than in any other section of the United States. Here, I,OI3 billion feet or five-elevenths of all the Privately owned timber in the United States, is located. Fifty per cent of all the privately owned timber is in the hands of but thirty-eight holders, the smallest of these holdings being 3,500 million feet.

"The Lumber Industry"- Bureau of Corporations Report.

I9I3. Page XIX.

In the Lake States but I2.2 per cent and in the Southern pine belt but 8.7 per cent is held in holdings equal to this. The three largest timber holding companies in the Pacific-Northwest: the Southern Pacific Company, the Weyerhaeuser Timber Company, and the Northern Pacific Railway Company, own nearly one-fourth of all the timber in that region, their joint holdings being 238 billion feet.

The Southern Pacific Company holding is the greatest in the United States- I06 billion feet. This is about ten per cent of the private holdings in the pacific-Northwest. It stretches practically 680 miles along that railroad between portland and Sacramento

The second largest holder is the Weyerhaeuser Timber Company, with 96 billion feet. Mr. Frederick Weyerhaeuser, who had gained experience in Wisconsin and Minnesota pine, organized the Company in I899 for the purpose of buying up large timber grants from the Northern Pacific Railway. That road was low in funds and sold for 6,000,000 dollars, timber that is now worth I00,000,000 dollars and which will probably continue to increase in value at a less rapid rate.

The third largest holder, the Northern Pacific Railway Company, has 36 billion feet.

These three holdings have enough standing timber to build an ordinary five or six room frame house for each

of the I6,000,000 families in the United States in I900. If sawed into lumber and placed in cars, their timber would load a train about I00,000 miles long.

The holdings of the two railroad companies are Government grants and 80 per cent of the Weyerhaeuser Timber Company holding was bought from the Northern Pacific Company grant. Since the lumber industry may be controlled by the timber holders, it is possible for the concentration of private holdings to reach such a point that the entire lumber industry could be controlled and regulated by a comparatively few individuals by curtailment of the supply by them. The president of the National Lumber Manufacturers' Association recently said to lumbermen on the Pacific Coast:

> "The day of cheap lumber is passing and soon will be gone, but the men who make the money will be those who own timber and will be able to hold it until the supply in other parts of the country is gone. Then they can ask and get their own price".

Not only is there great concentration of private holdings in acreage, but the better qualities and species are held by the large holders or are "blocked in " in such a manner that they are more or less dependent upon the large holder. There is also a great interweaving of corporate and personal interests connecting holdings which are generally considered separate. These larger interests

are cutting little of their timber and by holding timber which is mature, are creating a waste while awaiting the rise in prices which is sure to come with a decrease in the available supply.

The principal reason that concentration of holdings in the Southern Pine region is less than that in the Pacific-Northwest is that there have been no extensive land grants in the South. Again, the density of the timber in the South is much less than it is in the West. The average stand of yellow pine is between 7,000 and 10,000 feet per acre, while in the Pacific-Northwest, stands of 100,000 feet to the acre are common and, in the redwood belt, selected areas have been reported with a stand of 1,000,000 feet per acre. Large buyers desire to own their timber in blocks and , for that reason, they desire a region where the stand is fairly uniform. The stand in the South is neither as dense nor as uniform as it is in the West, making the Southern Pine region less desirable for speculative purposes.

The following table will give a fair idea of the concentration of holdings in the timber resources of the United States. Group I contains the timber holdings of the Southern Pacific Company, the Weyerhaeuser TimberCompany,

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Personal inquiry-- Geo. K. Smith,
Secretary-- Yellow Pine Manufacturers' Association
and National Lumber Manufacturers' Association.

and the Northern Pacific Railway company. The other groups contain the holdings ranging between the limits shown below:

Group I: As above.

" 2: From I3,000,000,000 to 25,000,000,000 feet.

" 3: " 5,000,000,000 " I3,000,000,000 " .

" 4: " 3,500,000,000 " 5,000,000,000 " .

" 5: " 2,000,000,000 " 3,500,000,000 " .

" 6: " I,000,000,000 " 2,000,000,000 " .

" 7: " 500,000,000 " I,000,000,000 " .

" 8: " 250,000,000 " 500,000,000 " .

" 9: " I25,000,000 " 250,000,000 " .

" IO: " 60,000,000 " I25,000,000 " .

" II: Less than 60,000,000 feet.

The investigation area includes the Pacific-Northwest, the Southern forest and the Lake State region of the Northern forest, including in all, 80 per cent of the privately owned timber in the United States.

Following table taken from the Bureau of Corporations Report-- "The Lumber Industry"-- I9I3. Page I2.

CONCENTRATION OF TIMBER OWNERSHIP BY REGIONS, SHOWN CUMULATIVELY, IN ENTIRE INVESTIGATION AREA.

	Number of holders	Amount of timber owned in billions of feet	Per cent of total.
Total		I,747.0	I00.0
Group I.	3	237.5	I3.6
" I & 2.	8	339.5	I9.4
" I - 3.	22	459.0	26.2
" I - 4.	48	574.3	32.8
" I - 5.	90	690.5	39.5
" I - 6.	I95	839.7	48.0
" I - 7.	385	972.I	55.6
" I - 8.	658	I,068.5	6I.I
" I - 9.	I,I47.	I,I53.3	66.0
" I -I0.	I,802	I,208.8	69.2
" II.	---	538.2	30.8

Besides holding an immense acreage, it has already been stated that the large private holders also have the best quality of lumber and the denser stands. Perhaps we can best show this by a table of the privately owned timber in the three sections by groups, and classified as "more desirable" and "less desirable" timber.

PERCENTAGES OF THE MORE DESIRABLE AND OF THE LESS DESIRABLE TIMBER OF THE SOUTHERN STATES, IN HOLDINGS OF THE SEVERAL SIZE GROUPS.

	More desirable timber		Less desirable timber.	
Total	billions of feet.	per cent	billions of feet.	per cent
Total	309.8	100.0	203.4	100.0
Group II	77.3	25.0	139.1	68.4
" 10	14.8	4.8	9.9	4.9
" 9	22.8	7.4	11.7	5.8
" 8	31.1	10.0	12.1	5.9
" 7	42.8	13.8	9.6	4.7
" 6	36.0	11.6	10.4	5.1
" 5	32.2	10.4	8.3	4.1
" 4	30.9	10.0	1.8	.9
" 3	21.5	6.9	.5	.2
" 2	.4	.1	----	-----
" 1	----	----	----	-----

From the table it appears that groups 2 to 5 (holdings of over 2,000,000,000 feet each) hold over 27 per cent of the more desirable timber while they have but 5.2 per cent of the less desirable. Group II, or those holders with less than 60,000,000 feet each,have but 25 per cent of the more desirable and 68.4 per cent of the less desirable

timber. The holdings in this section are typical for each forest area of the United States- the concentration of the holdings of the more desirable timber being perhaps greater in the Pacific-Northwest while they are less in the Lake States and in the Northeast.

Not only are these private owners laying a good basis for the control of the lumber supply, but they are also getting control of a large amount of land. The total amount owned by the Southern Pacific Company, the Weyerhaeuser Timber Company, and the Northern Pacific Railway Company is 9,280,000 acres. The total amount owned by the I,802 largest timber owners is 89,744,000 acres; much of it being very fertile and the climate suitable for agricultural purposes. With the control of the transportation facilities- as some of them do control them- the effect on the economic conditions in these localities will be very great.

In recent years, the Government has been reserving its forests and also acquiring new ones in order to counteract the possible evil economic effects of the large concentration of private holdings, and also to regulate stream flow in the mountainous regions. Large forest areas have been bought up in the White and Appalachian Mountains

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" The Lumber Industry" - Report of Bureau of Corporations. I9I3.-- Pages III to I6I.

and reservations have been preserved in the Northwest and to a smaller degree in other regions. The forests of the Government are a source of income in two ways. The mature or fire-killed timber is sold to individuals who are required to log it immediately and also grazing rights are sold to stock owners for a certain term of years. In I9I2, the total amount sold was 43I,492,000 feet while I23,233,000 feet were cut under free use. The average price on the stump in I9I2 was $2 per thousand as against $2.56 in I9II; the difference being due to the sales of large quantities of fire-killed forests in the former year.

The total amount of timber land which the Government owns, including that which the States have, is estimated at a little over 600 billion feet, classified as follows:

National forests	539 billion feet.
National parks	II.8 " " .
Military reservations	0.3 " " .
Unreserved public lands	I3.8 " " .
State lands	35. 5 " " .
Indian reservations	29.0 " " .

At the present time, the private holders are furnishing

"The National Forests"- American Year Book.-- I9I3.

"Acquiring National Forests in the White and Appalachian Mountains".- 6Ist. Congress 2nd. Session. Senate Report # 846. - June I5, I9I0.

nearly all the supply with the practice of forestry on a very small per cent of their holdings, while the Government is reserving its timber and is practicing forestry on about 70 per cent of its holdings. For this reason the Government holdings are becoming stronger while those of private individuals are becoming weaker. The buyer of timber from National forests is relieved of all faulty titles and all expense for protection as the Government assumes the entire risk of loss by fire or otherwise.

Besides acting as a club against possible monopoly, these Government forests will have an effect on prices of stumpage similar to that of private witholdings from the market. Where there is still a large amount of available timber, it raises the intrinsic value of stumpage by withdrawing the excess supply of low grade timber from the market. AS prices advance, due to the private witholdings from the market, the Government can check the advance by throwing its timber on the market.

Section 3. Average stand per acre.

The average stands as given by any statistics must be read very broadly and must not be regarded in any way as precise. In the first place, the stand per acre is but an estimate and in the second place, there are very

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Report of the National Conservation Commission.- Feb.,I909. 60th. Congress, 2nd. session. Senate Doc. # 676. Vol. II. -- Page I9I.

few holdings where the entire area has been estimated in anything like an exact way. A typical plot is taken and the estimate of this is taken as the estimate of the average stand of the entire area. As a general thing the averages as given are too small, due to the fact that cruisers would rather have their estimates too low than too high. The timber owner is always pleased if the cut of lumber overruns the estimate of the cruiser while he may stand a financial loss if the estimate of the cruiser has been too high.

The methods of different cruisers vary. An old and experienced onewill frequently go out and walk all day through the timber without taking a single note and at night set down his estimate of the acreage covered and the number of feet of lumber thereon. Sometimes he will walk back and forth, pacing off strips of uniform width and estimating the number and size of the trees as he walks. If a cruiser's estimate, when taken in this manner, comes within ten per cent of the actual cut, it is considered close. Many times, the estimates of two different cruisers will vary as much as 50 per cent. A more exact method of making estimates and one more usually followed, is to lay off a plot of known area and count the trees on this,- also

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" National Forests and the Lumber Supply" - Thos. H. Sherrard, Ass't. Forester.
Agricultural Year Book --- I906.

measuring their diameter at the base, their height, and estimating the diameter at the top of the log. By the use of log scales their volume can be pretty closely approximated. The plot of ground chosen is taken where the timber stand is considered an average of the whole area whose stumpage is to be estimated.

Of course the exact amount of lumber cut cannot be calculated even after the cubical content of the log is known because the waste in sawing depends upon the methods used, the sawyer, the homogeneity of the log, and many other factors. The amount wasted in logging varies with the kind of trees, the stand, and the care used in felling them. Some species split and break much more easily in logging than do others.

The average stand per acre for all timbered land in the Pacific-Northwest, the Lake States, and the Southern States is given by the Bureau of corporations report as 11,300 feet. In the Pacific-Northwest, the average is 32,000 feet per acre; Southern Pine region, 6,100 feet; and Lake States, 5,600 feet. Due to heavy stands of cypress and long-leaf pine, the average stand in Louisana is higher than in any other State in the Southern region. Mr. Geo. K. Smith of the Yellow Pine Manufacturers'

Personal Interview---- Professor W. W. Davis of University of Kansas.

Association, gives the average stand of yellow pine in the South as between 7,000 and I0,000 feet per acre. Professor Davis of the History department of the University of Kansas, whose father is an extensive timber owner and mill man of this region, gave I0,000 feet per acre as his estimate. These estimates only strengthen the assertion that any statistics given must be read very broadly and must not be taken in any way as precise.

Again, it is the large holdings which have the dense stands. In the Lake States, the average stands for holdings of 60,000,000 feet and over is about one-fourth greater than for holdings below that size; Southern Pine region, two-fifths greater; and Pacific-Northwest, three-fourths greater. In California, Oregon and Washington, the average for such large holdings is nearly twice as great as for those under 60 million feet.

Section 4. Value of Standing Timber.

The value of standing timber depends ultimately upon:

I. The market value of the lumber which can be manufactured from it.

2. The accessibility, cost of logging, manufacturing, and getting to market.

Many other factors as interest, speculation, etc. enter

in and keep the value of stumpage below that margin established by subtracting the manufacturing costs from the market value of the lumber. This margin, however, sets a limit above which stumpage values cannot permanently go. A temporary depression in lumber prices may cause the stumpage values to be, for the time, above this margin because the mills will prefer to keep on running and accept a lower price for their timber than they consider it worth than to incur the losses due to a shut-down for a short time.

The factors which determine the relative value of any lot of standing timber may be classified as follows: species, quality, logging conditions, accessibility to the mills, accessibility to markets, size of holdings, size, ownership, and topographic relation of neighboring holdings. Of these factors, species and quality are the most important, while logging conditions probably ranks third.

Logging conditions depend upon the density of the stand, the character of the ground, and the facilities for transportation. Other things being equal, it costs much less per I,000 feet to log a dense stand than a poor one. If the timber is near a stream so that the cost of hauling by wagon or logging railroad can be eliminated, its value will be much greater.

To be independent, a timber holder must have a large tract and a compact one. He can then erect a large mill himself or sell his timber to a company that will erect one. The economies of a large mill are much greater than of a small one but no one will erect such a mill unless he is sure of his supply for a sufficient length of time to pay him to erect a large mill. A small timber owner is at a disadvantage because he must either cut his timber with a small portable mill, with its accompanying wastes, or sell it to those large mills which are accessible. Generally not more than one large mill is situated favorably for his timber so he must sell at this mill's price. An agent of the Bureau of Corporations, reporting in 1908 on the value of long-leaf pine in Southwestern Alabama, said:

> "Large tracts in this and adjoining counties are bought at three dollars per thousand feet; small tracts are picked up by forties at one to one and one-half dollars per thousand feet".

Had it been impossible for the large holders to gain such large tracts, these disadvantages to the small owners would not exist because the logging railroads would have been built by the common carriers instead of by the lumber companies and the transportation facilities would have been equal to all. Large mills would have been located at favorable points and the economies of manufacture would have been much greater. As it is, a large

mill will not be built unless a fifteen or twenty year supply is already in their hands or they are so situated that they can obtain their supply in the open market.

The great rise in stumpage values has been due, to some extent, to the causes of the general rise in prices of commodities but, more especially and to a much greater extent, to the depletion of the forests and the increase in population. Since I900, it is estimated that a rise of fifty per ecnt above the price at that time is due to general causes while all other increase is due to artificial ones, either the ones mentioned or others. The per capita consumption of the United States is greater than that of any other country of the world, being annually, 260 board feet. That of Canada is 200; Germany, 37; France, 25; and Great Britain, I4 feet.

The following table, while it does not give the true average values of all the timber of the species named, does show the relative rise in stumpage values in the United States from I899 to I907. Those for I899 and I904 are census figures based on the reported values of timber owned by sawmills. Those for I907 are based on reports made to the Forest Service by about I500 manufacturers for timber in their vicinity. In each case, most of the timber covered was comparatively accessible, and its value would therefore, generally be above the average value of all timber of the given species. It will

AVERAGE STUMPAGE VALUES OF VARIOUS WOODS FOR THE YEARS I899, I904,AND I907.

Kind	Average value per thousand feet.			Kind	Average value per thousand feet.		
	I899	I904	I907		I899	I904	I907
white pine	$3.66	$4.62	$8.09	birch	$ --	$ --	$4.40
ash	3.03	3.95	7.58	cypress	I.58	3.42	4.37
basswood	I.50	3.89	6.79	oottonwood	I.45	2.6I	3.97
hickory	--	6.69	---	beech	---	---	3.56
oak	3.I8	3.83	6.52	yellow pine	I.I2	I.68	3.I6
spruce	2.26	3.7o	5.49	maple	2.66	3.82	2.50
chestnut	2.7I	3.39	4.99	red gum	I.68	I.67	2.46
elm	3.30	5.58	4.94	redwood	I.06	I.55	2.35
poplar	2.8I	3.89	4.64	western pine	----	----	I.66
cedar	I.32	I.49	4.63	Douglas fir	.77	I.05	I.44
hemlock	2.56	3.5I	4.5I	tupelo	---	---	I.27

Report of the National Conservation Commission-- I908-I909. Vol. I.

be noted that the values of nearly all species have risen 100 per cent or over. Some kinds have been given a value during the last few years due to bringing into commercial use the cheaper and less desirable kinds of lumber or to the fact that uses have been found for them which were not known until recently.

In some parts of the country, the stumpage value has largely a speculative origin, that is, it is held at a value which the owners expect it will reach. Generally the owners are large timber holders and by witholding from the market large bodies of timber, create an artificial scarcity and a consequent acceleration in the rise in prices. This rise has an effect upon the minds of all the holders to make them hold out for still higher prices and, although there may not be any concerted action amongst them, their situation leads to the same effects as those of monopolistic control.

The effect of large holdings is great and is shown by the effects of the Weyerhaeuser purchase in Washington. A prominent man in the Grays Harbor country says:

> " Prior to the time that the Weyerhaeusers came in here, about ten years ago, when they purchased the Northern Pacific Railway lands, a large amount of stumpage had no value at all. Only the most accessible timber would bring $1 per thousand feet. Weyerhaeuser purchased from the Northern Pacific Railway at ten cents per thousand. This caused the stumpage in the country to have a value, and in five years the average value of stumpage was $1 per thousand feet.During

> the last five years it has steadily increased until the average value now is $2.50 per thousand".

The large timber owners are beginning to realize that they have a great natural resource and the tendency is, and will continue to be, to hold their timber for higher prices. The Government will have to use great judgment in disposing of its timber in order to counteract the tendency of these individuals to " run up" the price. With the talk of conservation and reforestation, the idea came to the lumbermen that they should demand for their timber prices approximating the cost of reproducing it. Mr. J. B. White, of Kansas City, in an address before the Lumberman's Club of St. Louis in I909, said:

> " Below the cost of production, there cannot be any trust that is injurious to a community or that is morally or economically wrong. -------- -------- It is a positive sin against posterity for a lumberman to sell his lumber at less than the cost of growing the trees or less than some good competitive substitute can be provided for. Any law and any trust that will prevent a man cutting and selling timber below the cost of reproducing it and a reasonable added profit, is a good law and a good trust for the people".

This is a wrong theory on which to base the present prices of stumpage. To induce men to plant timber today, it is not necessary to pay for stumpage at the present time, what it is expected to cost to reproduce that timber but it is necessary to make them believe that at the maturity of timber planted today, the price will be sufficiently

high to reimburse them with a reasonable profit on their investment. Any rise in stumpage now, caused by the agitation of government officials for reforestation is defeating their purposes for it is the intent to keep down the price of lumber for our posterity by increasing its supply to the extent of the reforestation.

Section 5. Conservation and Reforestation.

It has only been during the last few years that a general " Conservation of our natural resources " movement has taken place. Gifford Pinchot, United States Forseter, urged the application of the movement to the timber resources by the conservation of what we already have and by the reforestation of cutover areas. He maintained that the movement must come from the lumbermen themselves with the aid of the Federal Government and the States. President Roosevelt realized the same thing when he said; in 1905:

> " Henceforth the movement for the conservative use of the forest is to come mainly from within, not from without; from the men who are actively interested in the use of the forest in one way or another, even more than from those whose interest is philanthropic and general. The difference means to a large extent, the successful preservation of our forest resources for our posterity".

Some idea of the slaughter which the forests have

undergone can be obtained from the following estimates of the areas and quantities of timber of the various divisions before settlement and now:

The Northern forest containing white and red pine, spruce, hemlock, cedar, balsam fir, and several hardwoods, had an estimated area of I50 million acres and contained I,000 billion feet of lumber. In I908, but 90 million acres, or 60 per cent of the former area, and 250 billion feet of timber remained.

The Southern forest contained 220 million acres and I,000 billion feet of lumber. The principal timber is yellow pine and its standard of excellence is found here, but considerable cypress and some hardwoods are also found. Its area in I908 was about I50 million acres or 68 per cent of its former area. It had left but 638 out of its original I,000 billion feet of lumber.

The Central or Hardwood forest is more nearly exhausted than any of the others. It contained oak, yellow poplar, elm, hickory, chestnut, red gum, ash, and walnut, principally. Its former area was 280 million acres containing I,400 billion feet of lumber. In I908, its area was about I40 million acres or fifty per cent its original area and only 425 billion feet of lumber remained.

The Rocky Mountain forest contained about 400 billion feet of lumber consisting of western yellow pine, lodgepole pine, larch, spruce, western red cedar, western

white pine, Douglas and other firs. It comprised an area of II0 million acres which has been reduced but slightly, being estimated in I908 at I00 million acres or 9I per cent of its original area. It contained then about 335 billion feet of lumber.

The Pacific forest, containing I,400 billion board feet of Douglas fir, western yellow pine, redwood, western red cedar, and sugar pine, has been reduced in area but II per cent,- from 90 million to 80 million acres. The amount of timber left is about II78 billion feet.

In the whole United States, the forests cover only about one-fourth the total area, or 550 million acres, whereas they formerly covered about 850 million acres. The total lumber resources of our forests are estimated at 2,800 billion board feet of which 2,200 billion, or four-fifths are privately owned and one fifth, or 600 billion feet, is publicly owned.

According to the most recent estimates, the standing timber of the United States will not last much over 50 years at the present rate of cutting. Between I880 and I900, our population increased 52 per cent, our lumber cut 94 per cent; so that there is an increase in cut which is not only absolute but relative. To meet the present demands upon them, and still not be diminished, the forests must make an annual growth of from thirty to

forty cubic feet per acre. The present rate of growth is about ten cubic feet per acre. This includes 200 million acres of mature forests where the decay balances the growth. Not counting the loss by fire, we take from our forests annually from three and one-half to four times their growth. By reforestation, the timber lands of Saxony and of Prussia, where the trees are of slower growth than in the United States, have been made to produce annually 93 and 65 cubic feet, respectively. It should be comparatively easy therefore, by the use of proper methods, for us to bring our annual growth to at least thirty cubic feet per acre.

Havoc has been wrought in the United States by allowing private interests to direct the cutting entirely. Trees have been cut from the unproductive lands when they might have been first removed from the fertile lands. Much timber has been cut and burned in order to clear the land for agricultural purposes. This was particularly so in the central hardwood belt where the soil and climate were particularly adapted to agriculture. Even during the last ten years, millions of feet of timber have been cut and burned in clearing, either because the timber at that time was not considered merchantable or because the facilities were not favorable for sawing.

" Influence of Forestry upon the Lumber Industry"- Overton W. Price. Agricultural Year Book.-- I902.

We know that many species are becoming scarce while others are almost exhausted. The list of woods accepted as merchantable lengthens each year. Some that were considered valueless a few years ago are now used in many ways. But, in spite of the improved methods of manufacture and the use of these less desirable woods, the price of lumber steadily increases. The exhaustion of the large tracts will lead to the elimination of the large sawmill and the gradual adoption of the moderate sized ones. By the application of forestry, the supply will become more and more constant and for that reason, prices will become more stable. Lumbering will lose its speculative nature and the basis of lumber prices will be the cost of stumpage growth plus the cost of manufacture plus a legitimate profit. Prices will remain normal and steady, the regulating factor being the supply, that is: the amount of timber produced in relation to the demand.

Fifty or sixty years ago, logging in the Northeastern forest was at its height, from 1870 to 1880 the Lake States furnished most of the lumber, while at the present time the Southern States furnish about one-third the total output of the United States, with the Northwest forests coming more into prominence each year. With the

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" Our Forest Balance Sheet" - P. L. Allen.
Nation -- 1907. Pages 425 to 426.

decline of each forest, we begin to see that the supply cannot last long unless some radical measures are taken to replace it.

Recommendations have been made for the conservation of our timber resources by improvements in all stages of their existence,- from the standing timber to the manufactured product. These include for the standing timber:

I. Prevention of forest fires by a more efficient system of patrol and by improved methods of turpentining.

2. Reforestation of lands suitable for timber growth which are now treeless and the care of the young growth of timber on cutover lands.

3. A revision of the taxation system so that timber lands could be profitably held for a second growth.

4. A tariff revision and an adjustment of freight rates in favor of the low grades of lumber.

5. The logging of the mature forests to the exclusion of those growing.

6. The prevention of the burning of valuable timber in clearing land for agricultural purposes.

For manufacturing, the principal recommendations are:

I. Elimination of waste in logging and to leave the cutover lands productive.

2. The elimination of waste in the mill by the use of improved machinery, the utilization of the waste

products and by a revision of the standards for lumber cutting.

Finally, the finished product should be preserved by the use of commercial preservatives, of which there are many now on the market, and the use of substitutes for lumber should be encouraged.

The forwarding of the movement to prevent forest fires by the expenditure of Government and State funds is of great importance. Since I870, forest fires have destroyed annually, $50,000,000 worth of timber. While most of the forest fires do not injure the mature or nearly mature timber for lumbering purposes, they do kill the small trees which would be ready to spring up as soon as the larger growth was removed. To prevent forest fires, an efficient system of patrol is necessary and to have this, more men must be enployed than are at the present time and of course this would necessitate a greater appropriation for fire patrol purposes. Under the present system of boxing for the turpentine industry, small trees are killed and large trees are boxed so deeply that they are blown over and thus create a fire menace. By the cup and gutter method of turpentining, which has been approved and recommended by the United States Government, about

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Report of the National Conservation Commission.
Vol. I --- I908 and I909.

30 per cent greater yield and a better quality of turpentine is had without serious injury to the merchantable timber.

The Government is urging the reforestation of lands which are more suitable to the growth of timber than to the growth of other products. So far it has met with little success as forestry is practiced on less than two per cent of all private holdings. The proper way to promulgate interest in forestry is to make the practice of it to the advantage of the owner. While every owner should not begin the practice of forestry on all his holdings immediately perhaps, it should be to his advantage to try it on some of his holdings so that the best methods of reforestation could be determined. The cooperation of the Federal Government, the State, and the individual is necessary to make reforestation practicable.

Mr. Graves, head of the National Forest Service, at a meeting of the American Forestry Association in 1911, said:

> " The conditions which prevent private owners from practicing forestry must be changed. They must be given public aid and protection from fire; there must be a reasonable system of taxation of growing timber; there must be co-operation in meeting the peculiar difficulties of their business which tend to stand in the way of conservation".

Section 6. Taxation.

The Government has practiced reforestation on 70 per cent of its holdings for the past few years. The amount of timber land, including the Government holdings, on which it is practiced is only I8 per cent of the total area of timber land in the United States. Probably the main reason that it is not practiced more is because of the taxation system in vogue at the present time. It takes only a hundred years to grow a fairly good pine or red oak, but even what seems to be a light annual tax on the growing tree is confiscatory by the time the tree is grown. For this reason the land, when cleared, is used for agricultural or some other purposes where the income will be realized sooner.

The general property tax, therefore, is not applicable to timber land. It is destructive to reforestation and conservation on private holdings. The most equitable tax, perhaps, would be a tax on the cut timber imposed at the time of logging. This tax would be paid at the time the income was realized and there would be the many advantages favoring it which now favor the income tax. The trouble now is not so much with the amount as with the method of taxation. If the general property tax were strictly enforced, it would undoubtably impose a heavy burden on the forests, but it is not now being

rigidly enforced as a general rule. There is no guarantee that this leniency will continue and investors will not reforest cutover lands while there is any probability that the present system will be enforced. The single tax on yield would relieve the one who carried on reforestation of any fear of the taxes confiscating the entire profits of the project.

Forestry aims to utilize the present product of the forest with the greatest possible economy and profit to the owner but, at the same time to provide for the continuance of the forest and for the production of timber in the future. Forest planting will pay where the forest can be protected at a reasonable expense, where the taxes are not excessive, and where a sufficiently good market for the timber can be counted on. In New England, some forest plantations have paid six per cent while still higher rates have been realized in the prairie States, where small trees have a higher value. The greater profit, however, will be realized in buying up the lands where there is a young growth of trees already started and caring for these until they mature.

" The Taxation of Forests"-- Prof. F. R. Fairchild of Yale.

Report of National Lumber Manufacturers' Association--- 1910. Pages 65 to 77.

Section 7. The Tariff.

The National Lumber Manufacturers' Association has always fought a reduction of the tariff on lumber on the ground, lumbering was entitled to protection as much as any other industry in the United States and also that a tariff reduction meant a further waste of our forest resources. They claim that the cheap labor of Canada can produce lumber so cheaply that it will compete with American lumber even after the freight across the Great Lakes is paid. In fact, they claimed that it did compete with American lumber after paying the duty of $2 per thousand feet as it was until quite recently. The lumbermen claim that with free trade, the price of lumber will be so reduced that the people will demand only the better grades of lumber as they have been doing heretofore, and our manufacturers will not be able to utilize the lower grades of the tree and these parts will be left in the forest to decay and create a fire nuisance. They say that waste is not voluntary on the part of the lumbermen, it is mandatory. Public policy has placed the price of low grade lumber below the cost of production and for this reason the lumberman could not use it. Thirty-five per cent of the tree is lost on this account.

On the other hand, it is maintained by conservationists that a reduction of our tariff will preserve

our forests and at the same time will work no hardship on our manufacturers. The imports of lumber are largely in the form of the rough product or unsawed logs. These are sawed and finished by the American mill and therefore the reduction of the tariff will not reduce the supply of our mills while it will reduce the amount of our timber cut. The argument for free trade is that, in effect, it will reduce the price of lumber to a point below the present cost of production, and by making lumbering unprofitable, will leave our forests uncut and preserved for future use.

Perhaps the best example of the influence of the tariff on the lumber industry is that of the Canadian tariff. Years ago Michigan was full of standing timber and the Saginaw River was lined with sawmills. In 1884 over one billion feet of white pine lumber was manufactured on this river, while in 1906 not over twenty-five million feet were manufactured in the same district. Many planing mills and box factories sprang up when white pine lumber was plentiful and, on seeing the Michigan forests disappearing, the owners secured timber lands in Canada with the idea that the logs from Georgian Bay could be towed across Lake Huron and up Saginaw Bay into the Saginaw River. Then came the American tariff of $2 per thousand

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" Timber Conservation as Related to Reciprocity" - Thos. B. Walker. American Review of Reviews. April 1911. Vol. 43- Pages 470 to 473.

feet on sawed lumber and Canadian retaliation by forbidding the shipment of logs into the United States so long as its rough lumber was excluded. The Michigan supply is gone and the box manufacturing industry has been falling off since I902, when it was at its high water mark. Canada has much more standing white pine timber than has the UnitedStates and yet we have held to the tariff to the detriment of the American manufacturers and to offer a premium on the destruction of the American forests.

It is probable that the lumbermen have mistaken the causes of their trouble and the real difficulty lies more in the excessive freight rates on low grade lumber rather than in the low prices caused by the competition of cheap labor made possible by the removal of the protective tariff. Freight rates and lumber conservation are interrelated to a considerable extent. The freight rates on low grade lumber are generally the same and sometimes even higher than they are on high grade lumber. The manufacturers are too far from the consuming markets to utilize the low grades unless an adjustment of freight rates is made in their favor. At the present time, it costs about $24 per thousand feet to ship lumber by rail from the Pacific to the Atlantic coast and takes on an

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" The Tariff and the Lumber Trade"- W. B. Mershon.
Annals of the American Academy.
Vol. 29. -- Pages 556 to 558. May I907.

average about 42 days. With free tolls, American ships could carry lumber for $8 per thousand feet and the average time would not exceed 2I days or a saving of two-thirds in cost and one-half in time.

Section 8. Wastes.

If the 200 million acres of mature forests, where the decay balances the growth, could be logged immediately and the growing forests left, there would be an annual saving of ten cubic feet per acre on each acre logged at the present rate of growth. This would amount to three and one-third cubic feet or forty board feet of lumber on each acre cut assuming that one-third the log is utilized for lumber. This would be a saving of 440 million feet on the entire area cut each year or nearly one per cent of the annual cut. At the same time the younger forests could be maturing.

The greatest waste in our timber resources comes in the process of manufacture. Much timber is lost in felling. Where possible, the trees should be felled uphill instead of down-hill in order to prevent breakage and the younger growth should be released from the branches of the felled tree after the log has been removed.

" Our coastwise Trade"-- Report of National Lumber Manufacturers' Association. I9II. Page 58.

The Government has urged the cutting of only the mature trees, but this is not economical from the lumberman's standpoint because he must make a clean sweep of all the trees of merchantable size and even if he should leave some of the smaller ones, they would be injured in the logging process so that many of them would die. The lumbermen should, however, cut the trees which contain some merchantable lumber even though parts of them are valueless so that room will be made for the younger growth. Things he should avoid are:- the cutting of high stumps, the leaving of merchantable logs in the forest, the use of the better grades of timber in the construction of bridges and logging roads, and the careless loss of logs in transportation to the mill by water or by rail.

The losses in milling could be lessened in at least three ways:

1. By the use of more modern machinery.
2. By the utilization of the waste materials.
3. By a revision of the standards.

The losses by old processes amounted to fully three-fourths of the log. Now, about one-third of the log is saved on an average or, in 1,000 feet of lumber in the log, we obtain about 320 feet of sawed lumber. The rest is lost in kerf, slabs from the edger, and uneven portions of the log. As yet, not much use has been made of this waste except as fuel for the boilers and kilns.

Less than fifty per cent is used for this purpose and most of the remainder is burned at an expense. This waste could be used for the manufacture of wood pulp or large quantities of alcohol and pine tar could be obtained from it. The manufacturers are beginning to realize its value and sawdust which was formerly dumped into the river is now worth thirty dollars a car load. The yellow pine manufacturers in particular, and those of Douglas fir also, have excellent opportunities to divert much of their low-grade lumber into paper, turpentine, alcohol, and other by-products. The manufacturers of hardwoods are facing a much less difficult situation. Their products are used in a large number of different industries in which the cost of raw material is only a small proportion of the cost of the finished article. In these industries, viz.: furniture, vehicle, handles, and many others of minor importance, wood is used because it has properties which make it peculiarly fit for the purpose that it serves and not principally because it is the cheapest raw material suitable to the needs of the manufacturers. This diversity of use offers an excellent opportunity to the manufacturers of hardwoods to work up their logs not only into the standard forms of lumber but also into numerous sizes of small dimension stock. A standardization of small dimension stock of different species should result

in greater profits to the lumber manufacturer through closer utilization of his logs and in cheaper material to the consumer.

Lumber associations have tried to inaugurate a new system of standards whereby boards of odd widths and odd lengths could be cut and also that shorter lengths might be manufactured. So far, not much progress has been made along this line as the retailer will not buy these odd sizes because of the prejudice of the carpenters and builders against them. If such standards could be adopted, much of the log which now goes into waste could be utilized.

Commercial preservatives for lumber have been used with varying success. They are manufactured primarily for two purposes:- to protect the lumber from insect parasites and to preserve it from the natural agencies of decay.The life of some products such as railroad ties and timbers has been increased about ten per cent. The use of these preservatives, together with the growing tendency to introduce substitutes for lumber in railroad construction and building, as well as in other lines, will add greatly to our timber resources. With conservation in these many ways and the practice of reforestation to

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Report of the National Lumber Manufacturers' Association.
I9I0.---- Henry Solon Graves--Forester.
Pages 8I to 94.

a large extent, the annual drain on our forests should soon become appreciably less than it is at the present time.

CHAPTER II.

THE SAWMILL AND LUMBER MANUFACTURE.

Having considered the resources of the United States in the raw material, we shall now examine the manufacture of that into the finished product and the distribution of that product. There are over 50,000 sawmills of various sizes in the United States and these employ nearly one million men. The value added to the raw material by the process of manufacture in 1909, was $ 867,948,000.

The two general types of mill are the stationary and the portable, the stationary being of far greater importance both from an economical standpoint and in the relation of the quantity of its output to that of the portable, 90 per cent of the total output being from stationary mills.

The portable mill is used by small timber owners to saw their own timber and by some larger owners to saw isolated sections of timber which would be difficult to log and transport to their stationary mills. Most of these mills are of the circular type and are very wasteful. There are two types of the stationary mill now in general use: the circular and the band, the old gang type having been

discarded almost entirely. The circular saw is more economical than the gang because the log can be shifted on the carriage so as to get a larger cut from it. The band saw cuts with the least kerf and is the newest type. The waste by kerf from this type is one-eighth inch or less while that from the circular saw is about one-fourth inch. The advantage of the circular saw is that the log can be "driven", giving a greater cut per day with it than with the band. The difference in the daily cut of the two, however, is not so great as is supposed by many, some manufacturers even maintaining that they can cut more with a band saw.

In a modern mill, the logs are deposited on the carriage platform by machinery, being taken from the pond or from the cars as the case may be. Of course the ideal of efficiency is obtained when the logs can be taken directly from the cars as they are needed but this is very uncertain due to the many wrecks and accidents occuring on a logging road to delay transportation. In case something should happen to the track so that cars could not be brought in, the mill would be compelled to shut down at a great loss, while if it had a reserve in the pond it could keep on running.

Personal interview-- Professor W. W. Davis.
University of Kansas.

The advantages of a pond as a storage reservoir, over the piling of the logs on the ground, are many. In the first place, worms will quickly attack the logs when they are piled on the ground while they will keep for fifty years or over in water without apparent deterioration except a slight discoloration of the sap. Secondly, the logs are much more easily separated and the species and quality desired transported to the carriage platform if they are in water. One man can point logs for a mill with an output of 50 million feet per year while it would require twenty men to do the same work if the logs were piled on land. Another advantage of the pond and one frequently overlooked by the mill owner is its use as a storage place for prize logs. When a long straight log is found, there is no economy in utilizing it to make common lengths of lumber, but it can be stored over in one corner of the pond and will command a high price on special occasions. Many of these prize logs were used during the St. Louis Exposition and the lumberman who had them could get almost his own price for them.

As labor is comparatively cheap, the labor saving devices about a sawmill are few. After the logs go through the saws and are deposited in the form of slabs on the offbearing carriage, they are run through the edger which cuts them into widths of standard boards. Two standard

size edgers will take care of an annual cut of twelve million feet. Very few mills cut more than this, the usual size cutting from seven to ten million feet per year or a daily capacity of about forty thousand feet.

From the edger, the boards are generally piled out from two to six months to air dry after which they are kiln dried. When they are put into the kiln, they have a moisture content of from ten to twenty per cent but when they are removed from it, this content has been reduced to five per cent. The time of drying varies with the species and the size of the boards. The cost of drying ranges from 75 cents to five dollars per thousand feet. All wood except structural timber must be dried, the process increasing the life, improving the workability, and preparing the lumber to take a finish.

There are two systems enployed in the drying kilns, the charge and the progressive. In the charge system, the kiln is filled to its capacity with green lumber and this is completely dried before any more is put in, while in the progressive system, the green timber is put in at one end and moved toward the other as the dried timber is removed. The warm air comes against the nearly dried lumber and takes some of the moisture left in it and carries

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" Kiln Drying Hardwood Lumber".-- Fred Dunlap.

United States Dept. of Agriculture.

it on to the greener lumber where the air becomes saturated and escapes at the cooler end of the kiln.

Checking, warping, twisting, case-hardening, or honeycombing of the lumber often results from the process of drying. The remedy for these lies in the proper application of heat and in proper piling. The wood and the moisture contained therein must be brought to the same temperature before the moisture is let off the surface or case-hardening will result. This is best accomplished by admitting steam until the wood has reached a high temperature. Different kinds of woods require different systems of piling and this can only be determined by experiment.

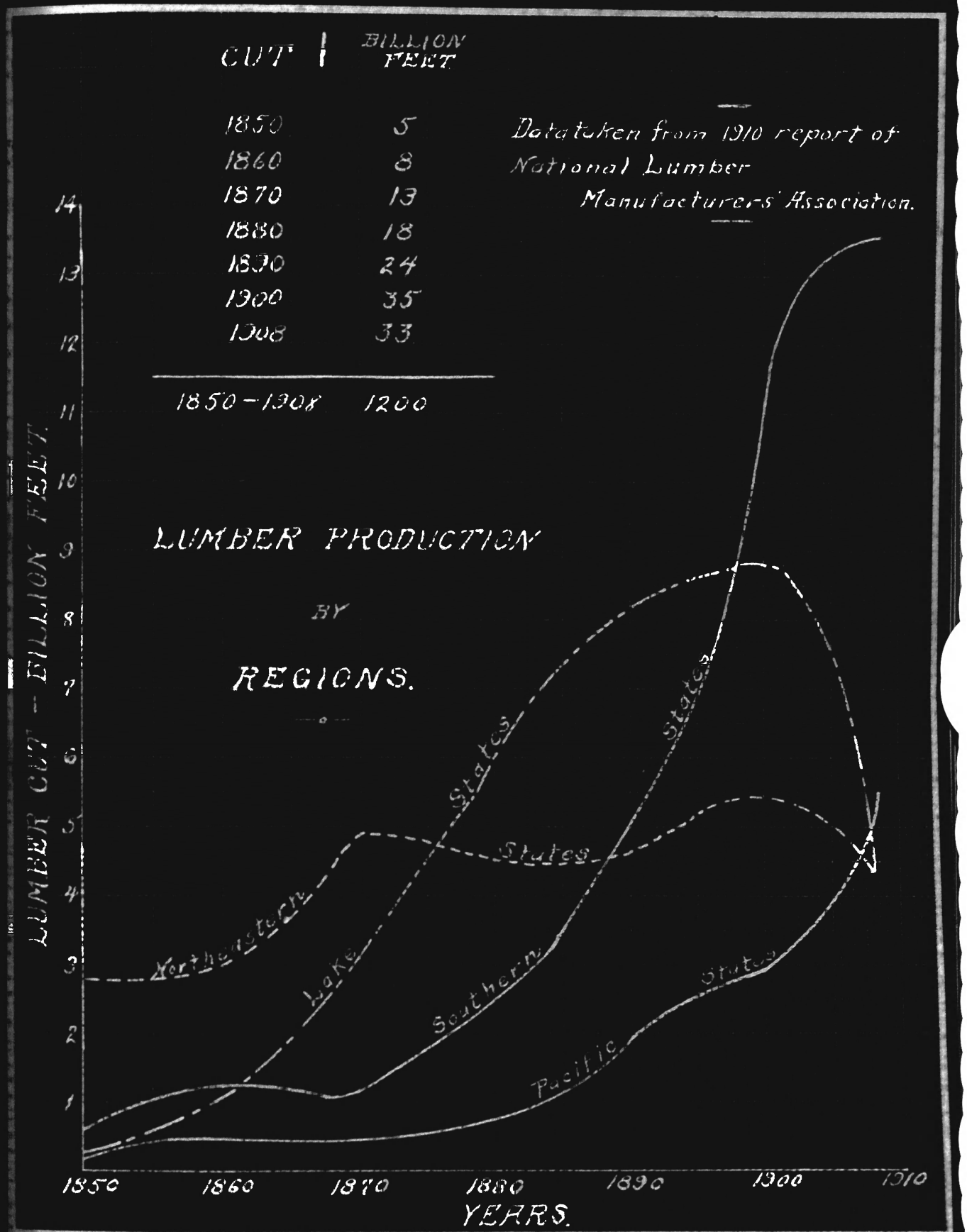
The large mill is located at a point where the supply of timber will run it for fifteen or twenty years. A large mill which cannot run for this length of time will not pay for its construction. The largest mills, therefore, are located either on a waterway where the logs can be towed to them from great distances or on an immense tract of timberland controlled by a single owner or company, the logs, as a rule, being transported to these mills by a logging railroad owned by the mill owner who is generally also the timber owner. When located on a waterway, the mill depends upon two sources for its supply,- the timber owners along the water way from whom

it can buy the standing timber and the open market. In some places, notably on bays and lakes, there is an open market for logs the same as for wheat, corn, or any other commodity.

Section 2. Lumber Production.

The total quantity of lumber manufactured in the United States since I850 has not been less than I,200 billion board feet or nearly one-half the estimated quantity of saw timber of all kinds yet standing in the United States. The production by regions is shown by the following diagram. The Northeastern States include New England, New York, Pennsylvania, New Jersey, and Delaware; the Lake States, Michigan, Wisconsin, and Minnesota; the Southern States, Maryland, Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisana, Arkansas, and Texas; the Pacific States, California, Oregon and Washington.

By a study of the curves, it may be seen that the production of the Northeastern States was above that of any other region up to the year I875 when the Lake States took the lead and held it until I898. The production of the Southern States had been increasing rapidly since I880 and in I898 they took the lead which they still hold. Their production at the present time, however, is not


CUT | BILLION FEET
1850 5
1860 8
1870 13
1880 18
1890 24
1900 35
1908 33
1850-1908 1200
Data taken from 1910 report of National Lumber Manufacturers' Association.
LUMBER PRODUCTION
BY
REGIONS.
LUMBER CUT - BILLION FEET.
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Northeastern States
Lake States
Southern States
Pacific States
1850
1860
1870
1880
1890
1900
1910
YEARS.

increasing so rapidly as in the past, the Pacific States are gaining rapidly and it is probable that they will lead in a few years. The curve for the Southern States will probably run along almost horizontal for a time and then will assume a shape similar to that of the Lake States, while that of the Pacific States will run almost perpendicularly until they reach their maximum of production.

The total lumber cut in the United States from I900 to I908 inclusive, in round numbers, was 329 billion feet. Yellow pine led with I00 billion feet; white pine, second, with 49 billion feet; Douglas fir,third, with 33 I/2 billion feet; oak, fourth, with 3I billion feet; and hemlock, fifth, with nearly 30 I/2 billion feet. Of other woods, not half as much of any kind has been manufactured as of hemlock, while the total amount of the five woods mentioned above equals 77 per cent of the cut of all kinds since I900. The quantity of each kind is summed up in the following table.(Page 5I.)

By the year I900, the manufacture of white pine had reached its maximum and was on the decline so that the figures do not show the comparative quantities of that wood which have entered into commerce. Its manufacture began in New England, moved across New York and Pennsylvania to the Lake States and now the center of production

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Report of the National Lumber Manufacturers' Association.- I9I0. --- Pages 97 to 99.

THE QUANTITY OF EACH KIND OF LUMBER CUT IN THE YEARS I900, I906, I907, AND I908.

KINDS	Millions of board feet.			
	I900	I906	I907	I908
yellow pine	9659	II66I	I32I5	II236
white pine	7742	4584	4I93	3345
Douglas fir	I737	4970	4749	3675
oak	4438	2820	37I9	2772
hemlock	342I	3537	3373	253I
spruce	I448	I645	I727	I4I2
western pine	944	I387	I527	I276
yellow poplar	III5	678	863	654
maple	633	883	939	875
cypress	496	839	758	743
redwood	360	660	569	405
red gum	285	454	689	589
chestnut	207	407	653	539
basswood	308	377	38I	320
cottonwood	4I5	269	293	232
elm	457	225	26I	274
cedar	233	358	25I	273
birch	I33	370	388	386
ash	269	2I4	252	225
beech	---	276	430	4I0
hickory	97	I48	203	I97
larch	42	I66	2II	239
sugar pine	53	I34	II5	I00
tamarack	8	I23	II3	I43
walnut	39	48	4I	44
sycamore	29	---	46	43
white fir	---	I04	I47	98
tupelo	---	48	69	69
balsam fir	---	----	53	70
not specified	498	I65	28	48
Total	35,068	37,55I	40,256	33,224

Taken from the I9I0 Report of the National Lumber Manufacturers' Association. Page 99.

is again swinging eastward. In I892, the manufacture of white pine was at a maximum with an output of 8 I/2 billion feet. Now the virgin growth of pine timber in the Lake States is nearly gone and the second and third growths, though knotty, are being used in the manufacture of boxes and crates.

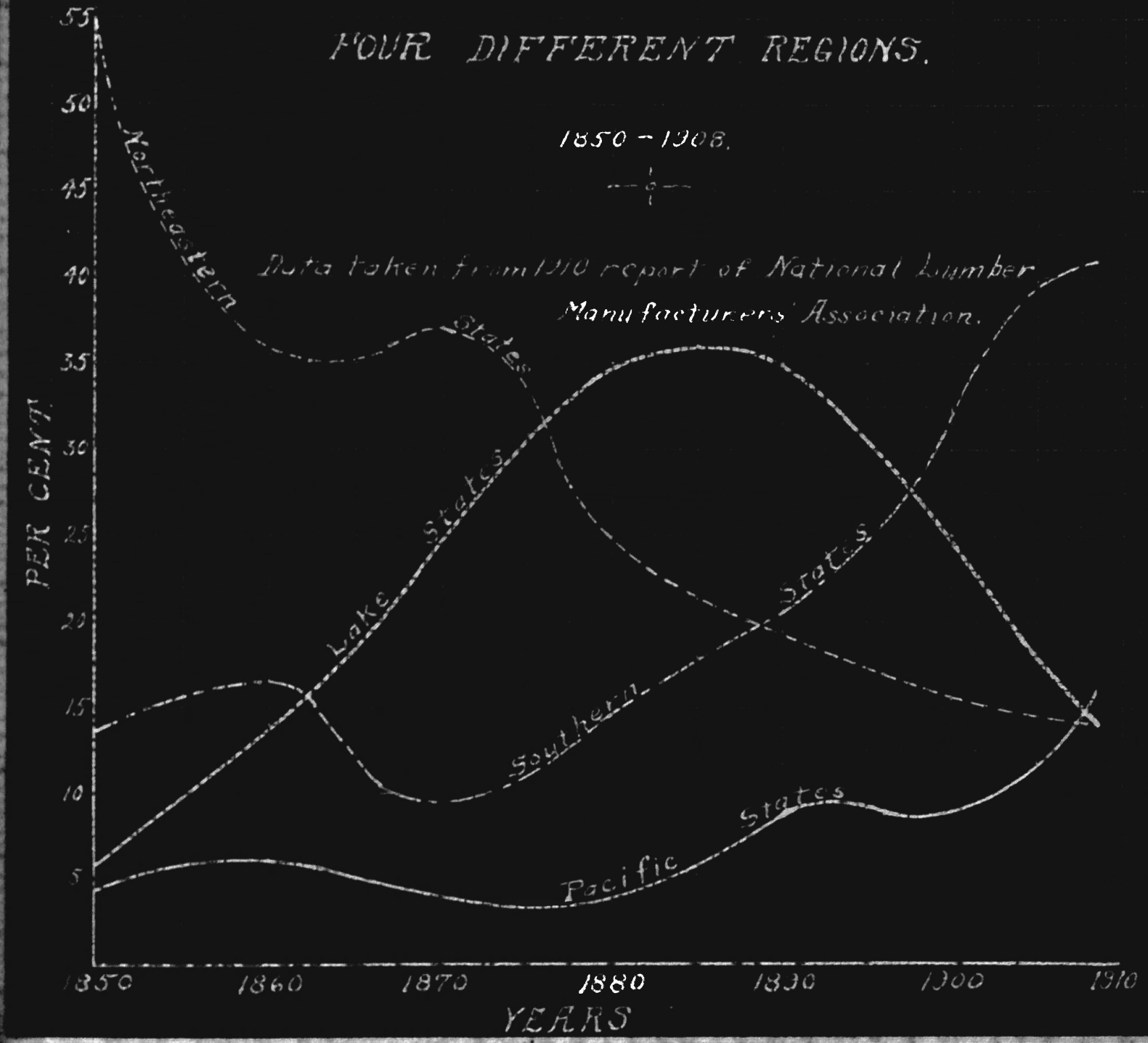
The westward movement of yellow pine has been similar to that of white pine. In I900, Georgia held first place with Louisana ranking seventh but a quick shift came and in I904, Louisana came into first place and has continued to hold it up to the present time. The largest annual output yet reported is I8 billion feet in I9I0 but, with the large capacity of the mills in that section, this figure stands a good chance of being surpassed at any time.

Probably the maximum output of the following kinds of lumber has been passed: white pine, oak, eastern hemlock, eastern spruce, cypress, yellow poplar, cottonwood, ash, and elm. Those woods whose cut will probably run steady for a few years are as follows: yellow pine, maple, red gum, chestnut, birch, redwood, basswood, cedar, hickory, sugar pine, tupelo, and walnut. And finally, in a group in which, with favorable market conditions, we may expect a heavy increase in cut, we will include: Douglas fir, western hemlock, western spruce, western yellow pine, western white pine, lodgepole pine, larch, and white fir.

PERCENTAGE OF TOTAL LUMBER PRODUCTION SUPPLIED BY THE FOUR DIFFERENT REGIONS.

1850 - 1908.

Data taken from 1910 report of National Lumber Manufacturers' Association.



Although the output of the Northeastern States is still as large as it was twenty years ago, their output has decreased greatly in relative importance. Supplying nearly 55 per cent of the total lumber production in I850, they furnished but 36 per cent in I860, not quite 37 per cent in I870, and have steadily dropped to I3.4 per cent in I908. The Lake States increased rapidly in relative importance of production and in I880 reached a maximum of thirty-four per cent which they held for ten years and since that time their drop in relative importance has been as rapid as their rise prior to I880. The increase of the Southern States has been as rapid as the fall of the Lake States and in I908 they supplied about 4I per cent of the total cut of lumber. The Pacific States have only begun their rise and we may expect a rapid increase in their production for the next few years and a more or less steady, horizontal curve for the Southern States.

As the production in the Northeastern States begins to depend more upon the second growth for its supply, the curve for that section will assume a horizontal position and will continue more nearly in that position. At a later date, the curve for the Lake States may be expected to assume a similar position. The curve for the Southern States, after running at a maximum for a few years, will probably assume some such form as that of the

Lake States and will drop suddenly. With favorable transportation and logging facilities, the curve for the Pacific States may be expected to run higher than that of any other section of the country because of the large acreage and the dense stands of virgin forests here,- the last in the country.

None of these curves predicts a bright and permanent future for the lumber industry because a manufacturing industry whose supply of raw material is likely to be exhausted is not established on a firm basis. The supply of raw material can only be assured through conservation and reforestation and when the supply is assured, the curves will run steady at a level of production that is not beyond the capacity of the forests to sustain.

Section 3. Utilizing Low Grade Lumber.

Since, with the present low prices of lumber prevailing, the consumer will use nothing but the better grades and for this reason 35 per cent of the log cannot be utilized, some adjustment is necessary for the elimination of this waste. There are plenty of ways in which the poorer grades can be used but it is not economical for the sawmill to provide them and the present freight rates are prohibitive to the shipping of this material to the

consuming mills. Much of the poorer grade lumber found in the top logs and in faulty trees could be used in the wooden box and crate industry, part could be consumed in the manufacture of wood pulp and much alcohol, tar, and turpentine could be obtained by the distillation of the sawdust and waste from the edger. Because of the high freight rates, the wood pulp and box factories must own their timber and use the better as well as the poorer grades, while these top logs are left in the forest to decay causing a loss of 35 per cent of the log in addition to that lost in kerf and slabs from the edger.

Furniture manufacture consumes 3.I per cent; the railroads, including ties, poles,and car materials, take 20.2 per cent; the manufacture of paper, 6.4 per cent; and the box industry a little over I2 per cent of the total annual cut of the forests. The relative importance of the last two in consumption can be seen and, since they can use waste products and the lower grade lumber nearly altogether, it is an economic waste if conditions are not adjusted to allow them to do this instead of being compelled to log first grade and growing timber. The wood pulp industry is most destructive to the forests because it takes all the timber at a clean sweep, leaving no seed trees or younger growth to reforest the cutover areas.

Adams Commercial Geography. -- Pages I47 to I5I.

More and more pulp is consumed each year and the loggers take the stumps from previous loggings, remove sunken logs from the waterways, and consume everything in fact that can possibly be used. In spite of this, our mills cannot supply the demand. The price of wood pulp has gone up and even when the tariff was in force we imported large quantities of this material from Canada.

Since I902, the wooden box industry in the United States has been on the decline. This decline has been due, partially to the depletion of the white pine forests in the Lake States and partially to the introduction of substitute packages. As the box industry is a source of cutting down waste in the lumber industry, this substitution is detrimental rather than favorable to the conservation of our forest resources. It is estimated that 65 per cent of the waste of poorer grade lumber is saved in the box industry. This means a saving of 23 per cent of the log and is certainly not a negligible quantity. Owing to the decline in the box and crate manufacturing industry, the sawmills have an accumulatuon of low grade lumber on hand which they cannot dispose of and which they have been compelled to burn in many instances.

" The Box Industry " - C. A. Stafford, Mg'r. of the National Box Manufacturers' Association. Report of the National Lumber Manufacturers' Association.- I9I0.

The substitute packages can be bought more cheaply than wooden boxes can possibly be manufactured but they are, nevertheless, uneconomical for the shipment of some products because of the extra breakage caused by the weaker packages; they cannot be piled up like wooden crates and require more warehouse room and more care must be exercised in handling them, causing the carrier extra expense. Lumbermen urge the carriers to change the classification of these packages so that this breakage and extra care can be paid for from the excess freight obtained by the new classification, and incidentally this would make the wooden boxes more economical for many shippers and would aid in bringing that industry back to its former position.

This waste of the poorer grades of lumber can be eliminated by the carriers only unless we allow the natural forces to take their course and await economic conditions which willcause considerable rise in prices. Then the consumer will buy the inferior grades of lumber for his rough building work. But to have this increase in prices, we must have a reduction in the supply in relation to the demand. This means depletion of the forests. This remedy will come too late, therefore, for conservation to be of much use. The damage will have been done. The effective remedy is the adjustment of the freight rates and of freight classification so that the inferior grades of lumber can be utilized now.

Section 4. Mill Prices of Lumber.

Lumber prices depend so much upon the grade, market conditions, cost of production, etc., that quotations are of but little value unless we know these conditions. The census figures for the average mill value of all grades since I900 are given in the following table. The order is that of the highest value in I908 which places walnut first and white fir last. The figures were taken from the I9I0 Census report on manufactures, Volume X.

MILL VALUES OF LUMBER I900 to I908.

Species	I900	I904	I906	I907	I908	Increase I900-'08. per cent	Decrease I907-'08 percent
walnut	$36.49	$45.64	$42.25	$43.3I	$42.53	I6.6	I.8
cherry	---	---	---	33.39	30.36	----	I0.7
hickory	I8.78	23.94	30.42	29.50	29.66	57.9	I .5
ash	I5.84	I8.77	24.35	25.0I	25.5I	6I.0	I2.0
yellow poplar	I4.03	I8.99	24.2I	24.9I	25.30	80.3	I I.6
cypress	I3.32	I7.50	2I.94	22.I2	2I.30	59.9	3.7
oak	I3.78	I7.5I	2I.76	2I223	2I.23	54.I	0.0
basswood	I2.84	I6.86	I8.66	20.03	20.50	59.7	I2.3
elm	II.47	I4.45	I8.06	I8.45	I8.40	60.4	.3
white pine	I2.69	I4.93	I8.32	I9.4I	I8.I7	43.2	6.4
cedar	I0.9I	I4.35	I8.I2	I9.I4	I8.03	65.3	5.8
sugar pine	I2.30	---	I6.II	I9.84	I7.78	44.6	I0.4
cottonwood	I0.37	I4.92	I7.I5	I8.42	I7.76	7I.3	3.6
birch	I2.50	I5.44	I7.24	I7.37	I6.42	3I.4	5.5
maple	II.83	I4.94	I5.53	I6.84	I6.30	37.8	3.2
chestnut	I3.37	I3.78	I7.49	I7.04	I6.27	2I.7	4.5
spruce	II.27	I4.03	I7.33	I7.26	I6.25	44.2	5.9
redwood	I0.I2	I2.83	I6.64	I7.70	I5.66	54.7	II.5
western pine	9.70	II.30	I4.0I	I5.67	I5.03	54.9	4.I
sycamore	---	---	---	I4.58	I4.67	----	I .6
balsam fir	---	---	---	I5.I6	I4.36	----	II.I
hemlock	9.98	II.9I	I5.3I	I5.53	I3.65	36.8	I2.I
beech	---	---	I4.05	I4.30	I3.50	----	5.6
tupelo	---	---	I4.I3	I4.48	I3.36	----	8.7
red gum	9.63	I0.87	I3.46	I4.I0	I3.08	35.8	7.2
tamarack	I2.48	I2.42	I5.63	I5.7I	I2.86	3.0	I8.I
yellow pine	8.46	9.96	I5.02	I4.02	I2.66	49.6	9.7
Douglas fir	8.67	9.5I	I4.20	I4.I2	II.97	38.I	I5.2
white fir	----	---	I2.9I	I5.45	II.38	----	26.3
Average	II.I3	I2.76	I6.54	I6.56	I5.37	38.0	7.2

That increases in value have occurred in woods whose output has increased as well as in those whose output has decreased is clearly shown by the following statement of the changes in cut and mill price of the fifteen leading kinds of lumber from I900 to I908. The figures are taken from the I9I0 census report.

RELATION OF THE INCREASE IN PRICE TO THE OUTPUT OF VARIOUS KINDS OF WOODS FROM I900 TO I908.

SPECIES	Per cent of increase from I900-I908:	
	Price	Cut
Yellow pine	49.6 %	I6.3 %
White pine	43.2	-56.9
Douglas fir	38.I	III.8
Oak	54.I	-37.6
Hemlock	36.8	-26.0
Spruce	44.2	2.6
Western pine	54.9	35.I
Yellow poplar	80.3	-4I.4
Maple	37.8	38.2
Cypress	59.9	49.8
Redwood	54.7	I2.4
Red gum	35.8	I06.8
Chestnut	2I.7	I6I.0
Basswood	59.7	3.7
Cottonwood	7I.3	-44.2

It is probable that the mill price of lumber has not risen any more than, if as much as, the general price level but with several important species either a decreased supply or an increased demand has exerted a strong influence upon the price. Of course retail prices follow more closely these wholesale prices of lumber than do the stumpage values,- retail prices depending more on local demand and competition, distance from primary markets, freight rate discrimination, etc. But while the stumpage values have increased four, five, and even six hundred per cent, why is it that lumber values have increased but 38 per cent? The answer is " Overproduction ". Mr. J. L. Thompson of Huston, Texas, in an address before the National Lumber Manufacturers' Association in 1910, said:

> " Recently we had a little meeting over at Memphis. We had seventy billion feet in a room about the size of this room here. We had all realized that there was only one evil. We took a vote on what was our trouble,- "overproduction" Every solitary man agreed on that, and everybody was willing to suggest a remedy; everybody knew what the remedy was. ---------- If I could inject something here to help Captain White on the conservation of our natural resources, I would like to do it, because I believe that that is the solution of the entire lumber proposition.-- --------- We have about reached the point where we must practice, preach, and talk and tell everybody of conservation; everybody should join the Conservation Association and stop the over-production and then we will solve our problems".

If it were possible for the lumber manufacturer to curtail his output of any particular kind or of all kinds so that the consumer would use all the supply and

only as he needed it, the the evils of our overproduction could be overcome. The demand would equal the supply, much cut-throat competition would be eliminated, and lumber prices would be given an impetus upward. As long as sawmills run day and night, it is hard to convince the consumer that there is overproduction but such is the case and these mills are working a hardship on themselves as well as on the lumber industry in general. The fact that the supply cannot be artificially curtailed, is one of the best arguments for the fallacy of the lumber trust.

Some manufacturer's associations have devised schemes whereby each member may know what prices his competitor is getting and more uniformity in prices is secured. The National Lumber Manufacturers' Association on the Pacific Coast has devised a scheme as follows:- A district that handles a dozen or more mills will organize and elect a secretary who stays at a central bureau. Each day, the mills in this district send in copies of the orders they receive from their men in the field to this secretary. These orders are bulletined in order, giving only the name of the consignor, the amount shipped, the State to which it is shipped, and the prices secured. The next day every mill knows the selling prices where the conditions are the same for manufacture as it enjoys. If one mill can secure more for a certain kind of lumber

than another, then the latter asks its agents to demand the higher price. There is no monopoly, price quotations vary, the market goes up or down, but as a general thing, better prices are received for the product.

Section 5. The Status of the Manufacturer as a Timber Holder, a Wholesaler, and a Retailer.

The manufacturer is almost always a timber holder as many of the large mills own their supply of stumpage. From personal inquiries of Mr. Geo. K. Smith, secretary of the Yellow Pine Manufacturers' Association; L. S. Case of the Weyerhaeuser Timber Company; and W. M. Beebe, lumber sales manager for the Long-Bell Lumber Company, information was received from all that the manufacturer nearly always acted as a wholesaler and sometimes as a retailer. Mr. Beebe says:

> " Ninety-five per cent of all the lumber manufactured is sold direct by the manufacturer to retail yards, whether line-yards or otherwise, and there are no combinations in the retail business that I know of, or ever heard of, that prevent a retailer from buying from a manufacturer for that is the way that all lumber is marketed. There never have been any combinations in effect which prevented marketing direct to the consumer if the manufacturer so desired".

The question as to where the wholesaler comes in, may be answered by saying that nearly every manufacturer acts as a wholesaler for his product. His main distributing yard may not be located near his mills but both the mills and the wholesale yards are under the same ownership.

The Long-Bell Lumber Company furnishes a good example of this. Their mills are in the yellow pine belt of Louisana while their wholesale house is in Kansas City, Missouri.

Many manufacturers either own their line-yards or control a number of them which market their products. The same person or corporation may be, therefore, and frequently is, timber holder, manufacturer, wholesaler, and retailer.

CHAPTER III.

LUMBER DISTRIBUTION.

The processes of distribution in the lumber industry are many and intricate. We cannot follow the lumber from the manufacturer to the consumer and say that it will travel through certain hands, for it may go that way and it may go some other way. The following diagram (page 67) will show the courses followed in distribution better than we can explain them. The entire industry is included in the timber holders in the diagram, in order to show that they have the power to control the whole supply if they were properly organized. It is not intended, however, to convey the impression that the entire industry is controlled by them at the present time.

Of course the manufacturer, who may or may not be the timber holder, is the first factor with which we have to deal. He manufactures the rough lumber, which he may export; he may sell to the railroads or the Government, to the contractor or the converter; or, he may dispose of it to or through the wholesaler or the line-yards. In case he disposes of it through the wholesale yards, he is the wholesaler himself. The manufacturer may also find a market for his product through mail-order houses or the so-called Farmers Cooperative Unions and Yards.

The wholesaler has been called the "Parasite of

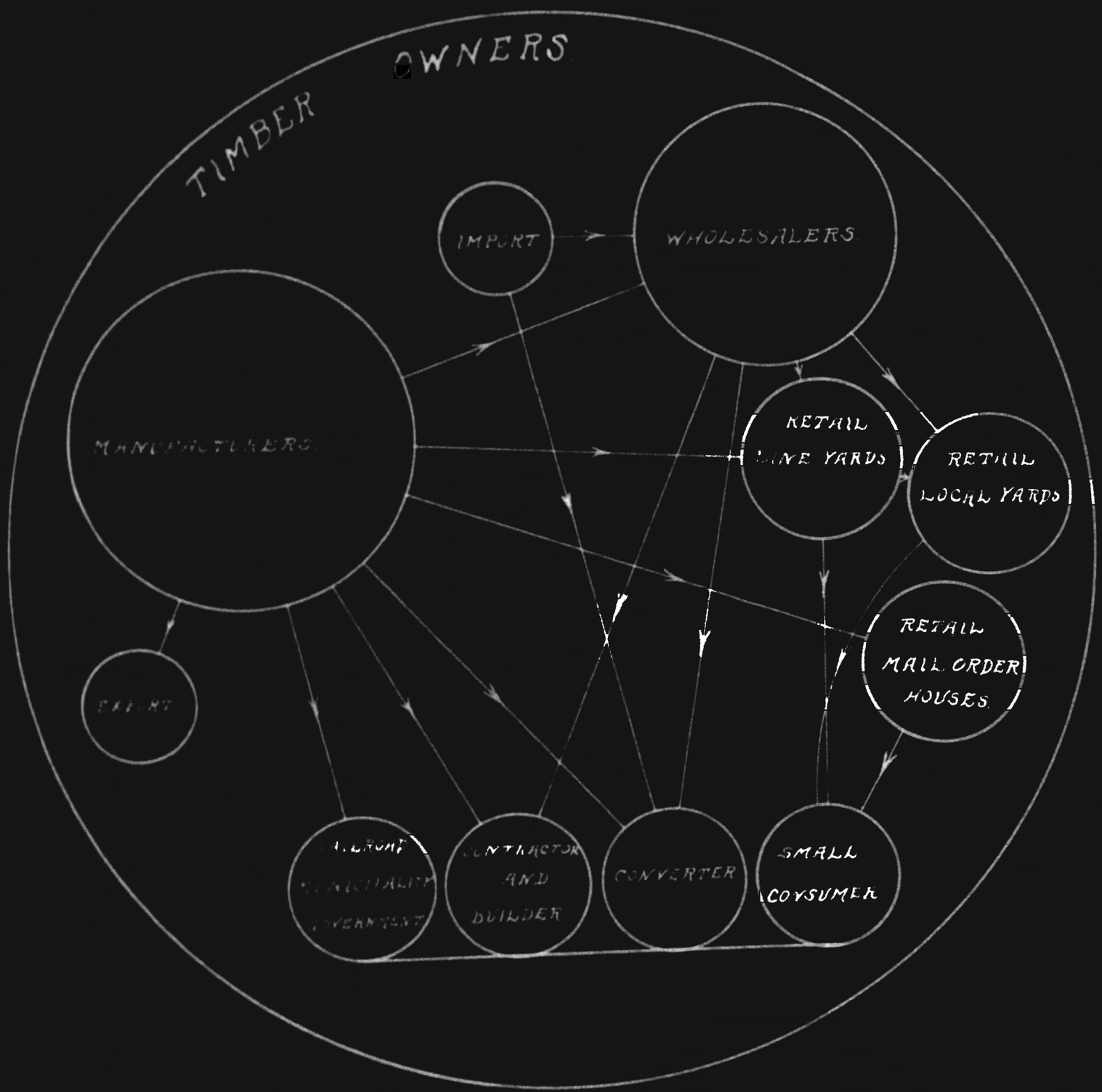


CHART SHOWING THE AGENTS OF DISTRIBUTION IN THE LUMBER INDUSTRY AND THEIR INTER-RELATIONS.

the lumber trade". Under present conditions, he seems to be a necessary evil but not so necessary, perhaps, as he is in some other industries. He obtains his supply of lumber either from the manufacturer or from imports and disposes of it to line-yards, local yards, or large consumers. The advantage of the line-yard over the local yard is obvious. The line-yard is able to buy its lumber in large quantities and can, therefore, drive a better bargain with the manufacturer and obtain better freight rates.

The manufacturer and wholesaler must bear most of the expense of holding the lumber as the retailer seldom orders more than enough stock to run him through a season of six months. The loss is not very large, the cost of insurance and the loss of interest on the money invested in the material being the principal items to consider. there is nothing to go out of style in the lumber business and the losses by decay are small. Of course the holder must carry insurance on the stock in order to protect himself against fire as that is practically the only way in which the lumber can be destroyed. In the diagram, the line-yard item represents the main yard which may be a supplying yard or simply an office where the accounting and auditing is done.

Section 2. Markets.

We shall classify the great network of markets, by which the products of the lumber manufacturer reaches the ultimate consumer, into primary and secondary according as they are wholesale or retail. The primary markets are located near the sawmills because of the close proximity of the supply or at a point where the geographic and economic conditions are particularly adaptable to the growth of a distributing market. Of course our import and export markets are located at a seaport or lakeport but the primary markets for our home consumption are located at railroad centers or at lake or river points which have large consuming areas tributary to them. Among our large primary markets, we may name: New York, Boston, Grand Rapids, Duluth, Chicago, Minnesota Transfer, Tonawanda, Minneapolis, and St. Paul in the North and East; Seattle and San Francisco in the West; New Orleans, Galveston, Mobile, and Charleston in the South and South east; and St.Louis and Kansas City in the center. Kansas City furnishes the local yards of part of Missouri and nearly all of Kansas.

Railroads may have a controlling influence upon the location of primary markets if water competition does not enter in. By freight rate discrimination, they can build up one market to the destruction of another or they

can regulate the competition between markets.

The secondary markets are the final links in the chain from the manufacturer to the consumer. They include all the smaller markets which have a retail trade only and each one supplies a comparatively small area. Most of them secure their supply of lumber from the wholesaler but a few purchase it direct from the manufacturer. They dispose of it to the small consumer in their immediate territory.

Section 3. Sources of Lumber and Lumber Products.

The supply of the product for this vast machinery of distribution, as shown by the chart, comes either from the sawmills or from other countries. The total values and quantities from the sawmills and the relative increase since 1899, of the various kinds of lumber are shown by the following table: (page 71.)

United States Census, 1910.
Manufactures---- Vol. X Pages 487 to 509.

TOTAL VALUES AND QUANTITIES OF DIFFERENT KINDS OF LUMBER MANUFACTURED IN THE UNITED STATES IN I899, I904 AND I909.

PRODUCT	I909	I904	I899
Total value (dollars)	724,705,760	465,I53,662	4I4,058,487
Rough lumber- Total quantity (M. ft.)	44,509,76I	34,I35,I39	35,084,I66
Total value	684,479,859	435,708,804	390,489873
Soft woods quantity	I6,277,I85	II,52I,78I	9,658,548
value	206,505,297	II4,780,600	8I,740,300
Hardwoods quantity	I0,6I2,802	6,78I,827	8,634,02I
value	207,I34,8I3	II5,872,338	II6,8I7I92
Lath- quantity(thousands)	3,703,I95	2,647,847	2,523,998
value	8,375,I62	5,435,968	4,698,909
Shingles quantity(thousands)	I4,907,37I	I4,547477	I2,I02,0I7
value	30,262,462	24,009,6I0	I8,869,705

In comparison to the amount of lumber furnished by our sawmills, our imports are almost negligible, the chief items being shingles, cabinet woods, and wood pulp. Canada and tropical America supply most of our imports, Tonawanda on the Niagara River and Erie Canal, and Oswego on Lake Ontario being the most important points for the receipt of Canadian lumber. Our imported cabinet woods, about 65 million feet annually, are scattered about over

the United States but most of it goes to Grand Rapids, Michigan where more mahogany is made into furniture than at any other point in the world. Most of our mahogany comes from British markets, London being the mahogany center of the world. The mahogany tree is a native of tropical America where a stand of two trees to the acre is considered a good average. Africa exports a similar species of less value. We import annually about 45 million feet of mahogany from Great Britain, Africa, Mexico, Nicaragua, Cuba, and Honduras. Following is a table showing the value of mahogany imports for the year 1908.

Great Britain	$766,863.
Mexico	603,252.
British Honduras	227,219.
Nicaragua	264,546.
British South Africa	112,872.

Our imports from Canada consist principally of wood pulp and shingles. The shingle mills of Washington and Oregon are suffering since the removal of the tariff on lumber because the Canadian mills are operated almost entirely by cheap foreign labor with which the American labor cannot compete. The American mills are compelled to shut down a great deal of the time while the Canadian

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" Where our Mahogany Comes from ".- Review of Reviews. Vol. 40. pages 493 to 495. October 1909.

mills do not cease operation, the owners finding a ready market for their products in the United States if they do not in Canada. Our wood pulp mills do not meet with the same difficulty because the demand for pulp is greater than all the mills can supply. The markets are never overstocked and the wood pulp manufacturer need only worry about his supply of raw material.

Besides rough lumber and dimension, which includes all lumber cut to an exact and precise size and finished on one side, we export some woods used for cabinet purposes. We are selling abroad our red gum under the name of satin walnut. The total amount of lumber exported annually is approximately three billion feet.

Section 4. Consumption of Lumber by Industries.

We use each year 90 million cords of fire wood, 148,500,000 ties, 1,750 million barrel staves, 125 million sets of heading, nearly 300 million barrel hoops, 165 million cubic feet round mine timbers, and 1,500 thousand cords of wood for distillation besides 3,400 thousand cords of native timber for wood pulp. White oak is used almost exclusively for ties, and spruce, poplar, hemlock, pine, and balsam are used in the manufacture of wood pulp. The following table gives an estimate of the quantity of timber used in the eleven largest timber consuming industries of the United States. The estimate is based on the

capital invested in these industries as reported by the Bureau of the Census and on statistics which have been gathered for the consumption in twenty states. The equation used in making the estimates is as follows: the amount of timber consumed in the entire industry is to the amount of capital invested in the entire industry as the amount of timber consumed by that industry in twenty states is to the amount of capital invested in that industry in the twenty states.

DISTRIBUTION OF LUMBER IN THE UNITED STATES BY INDUSTRIES.

Industry	per cent of lumber cut.	millions of board feet.
Planing mill products, including sash, doors, and general mill work.	29.70	I3,250
Boxes and crates	I0.00	4,448
Car construction	4.48	I,995
Furniture	3.02	I,348
Vehicles	I.97	877
Agricultural implements	.78	35I
Musical instruments	.6I	273
Wooden ware	.5I	228
Ship and boat building	.43	I93
Trunks and valises	.2I	95
Handles	.63	282
Miscellaneous industries	I2.30	5,470
Export	6.74	3,000
Sawed ties	2.28	I,0I7
Rough lumber and structural timbers	26.32	II,750

If we assume that practically all the planing mill products go into the building trades, the above estimates indicate that 56 per cent of the entire lumber

production goes into building and general construction work. This amount is made up as follows:

80 per cent	yellow pine manufactured	I3.0 billion ft.
80 " "	Douglas fir "	3.9 " ".
90 " "	hemlock "	2.7 " ".
Cypress, white pine, redwood, oak, and other hardwoods		5.4 " ".

About ten per cent of the total lumber production is used in the manufacture of boxes and crates, the amount being made up approximately as follows:

8.9 per cent	yellow pine manufactured	I,440 million ft.
28.0 " "	white " "	I,097 " ".
62.0 " "	redgum "	438 " ".
8.2 " "	hemlock "	252 " ".
6.4 " "	spruce "	II2 " ".
I5.7 " "	yellow poplar "	I35 " ".
Other species		974 " ".

This lumber must compete with fibre board and veneer and this competition is becoming more acute each year. Tests made at the Forest Products Laboratory show that the ordinary nailed box is inferior in many respects to improved types that are being introduced.

Approximately 4.5 per cent of the total lumber manufactured is used in the construction of cars. This amount is made up as follows:

7.27 per cent	yellow pine manufactured	I,I83 million ft.
3.4 " "	Douglas fir "	I68 " ".
6.I " "	oak "	272 " ".
6.I " "	yellow poplar "	52 " ".
Other species		280 " ".

Steel is coming into active competition with lumber

for car construction because of the greater safety of the steel construction.

Three per cent of the total lumber manufactured is consumed by the furniture industry. This industry also imports considerable amounts of mahogany and other cabinet woods. The domestic material consumed is as follows:

I4.0 per cent	oak manufactured	629 million feet.
I0.0 "	" maple "	II2 " "
24.6 "	" birch "	III " "
I3.9 "	" red gum "	98 " "
7.5 "	" yel. poplar m'f'g.	65 " "
6.7 "	" basswood manufactured	27 " "
All other species		306 " "

Two per cent of the total lumber manufactured is used in the manufacture of vehicles. Steel is being substituted for wood to some extent in this industry but it is more because of the difficulty in securing the raw material than because of its superiority.

Up to the year I895, there was very little veneer out in the United States but since that time the industry has increased in magnitude so that the timber used for veneering in I905 was 2I7,000,000 board feet and it is probably much more than this at the present time although we have no reliable statistics since that year. The figures in the following table are compiled from the statements

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" The Lumberman and Wood Using Industries"- McGarvey Cline.
Report of the National Lumber Manufacturers' Association.--- I9I2.

of 128 manufacturers.

WOOD USED AND VENEER STOCK PRODUCED IN 1905.

Kind	Per cent	Log scale (1000 ft.)	Veneer 1,000 sq. ft.	Average No. sq.ft. per foot board measure
Red gum	21.8	39,573	187,940	3.9
Maple	14.5	26,246	179,809	5.7
Yellow poplar	14.4	26,264	151,566	4.8
Cottonwood	9.0	16,357	45,223	2.3
White oak	8.9	16,129	115,265	6.0
Yellow pine	7.0	12,688	41.069	2.7
Birch	7.0	12,643	128,521	8.5
Basswood	6.3	11,376	82,925	6.0
Elm	3.1	5,544	60,708	9.0
Red oak	2.7	4,955	31,054	5.2
Ash	1.3	2,461	21,648	7.3
Walnut	1.0	1,725	21,181	10.2
Beech	.8	1,400	18,765	11.1
Sycamore	.3	576	1,435	2.1
Tupelo	.2	314	1,806	4.8
Miscellaneous	1.7	2,995	19,603	5.5
Total	100.0	181,146	1,108,518	5.1

"Wood Used for Veneers in 1905"- Gifford Pinchot.
United States Dep't. of Agriculture. Circular # 51.

Veneers are of three classes: sawed, sliced, and rotary cut, and rank as to quality in the order named,- sawed veneers being the highest and rotary cut the lowest grades. The 217,000,000 feet of lumber cut over one billion square feet of veneer. The thickness of the veneer cannot be extimated from these figures as we do not know the amount lost in kerf. Veneering is used extensively in the manufacture of furniture and in interior finishing. Desks, tables, chairs, and almost any other article of furniture can be made of cheap wood and covered with a veneer of expensive wood and sell at a price almost equal to the price of such pieces when made of the solid wood. There is a saving of the more expensive and less plentiful timber.

Perhaps the effect which this important industry has upon the lumber industry is not realized by very many. In the early nineties, doors were being shipped from Boston to Puget Sound. Washington fir and Oregon pine were, at first, of very uncertain value because they could not be dried without splitting and checking. In 1894, veneered doors first began to be made from this lumber and shipped east. The panels were made from rotary cut veneer by drying it rapidly and then glueing the layers together, ply upon ply, in crosswise fashion to form a panel one-half inch in thickness. The lumber is quite free from knots and the panels will not check or crack when

made in this way. Today, from two to two and one-half million doors are manufactured annually from this lumber and shipped into the eastern markets to compete, even there, with the Boston doors.

Section 5. Distribution by Species.

No one lumber producing locality is sufficient unto its own lumber needs. The hardwoods go to practically every part of the country, most of the territory west of the Mississippi being supplied by timber east of that river. Yellow pine for flooring, finish, and timbers goes north to the Canadian border and is the chief lumber of the eastern and central markets. White pine from the Lake States, hemlock from Pennsylvania, and spruce from Maine furnish most of the other lumbers of the eastern markets. Red cedar shingles and Douglas fir timbers are the only kinds of lumber that reach the Atlantic Coast from west of the Rockies in any considerable amounts, but red cedar siding and finish are shipped as far east as the Mississippi. Fir dimension is now driving white pine out of the retail yards of Nebraska and the Dakotas, while yellow pine is crowding it northward, much of that lumber being found as far north as Iowa. Cypress as tank stock and sash and

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" The Lumber Industry of America "- Milton O. Nelson. Review of Reviews-- Vol. 36 Pages 561 to 570.

door material is found over the entire country east of the Rockies. It is the most durable timber under moist conditions known, while redwood runs a close second and is used for the same purposes in its territory west of the Rockies.

In recapitulation, let us group the different kinds of lumber according to the markets in which they are found. In the eastern markets we have:- hardwoods, yellow pine, white pine, hemlock, spruce, cypress, red cedar shingles, and Douglas fir timbers. In the central markets, including also the northern and southern, we find:- yellow pine, hardwoods, white pine,cypress, red cedar shingles and siding, Douglas fir timbers, Oregon pine and western fir doors and some redwood. In the western markets are:- hardwoods, redwood, Douglas fir, western white and yellow pine, and red cedar shingles.

Section 6. Substitutes for Lumber.

We have discussed to some extent the substitution of other materials for lumber. We shall now treat it more fully and also consider the use of one kind of lumber for another. Where one kind of lumber has been substituted for another, it has generally been through necessity, but where another material has been substituted it is frequently because that material is considered better

than lumber for the particular use to which it is put. This is especially the case in railroad and building construction. The use of concrete and steel for bridges and trestles, the use of steel in the manufacture of cars, and the use of reenforced concrete in building has been in each case because these were considered more economical or safe for the purpose. Many experiments with concrete and steel for ties have been made but as yet no satisfactory substitute for wood has been found. It has been estimated that the railroads, by further substitution of steel and concrete, could reduce their lumber consumption one-third. Sheet steel is replacing wood in the manufacture of furniture, wagon boxes, and agricultural implements to a considerable extent. Brass and iron are used for beds instead of the expensive cabinet woods. Fibre containers are rapidly replacing the wooden boxes under the demand for a lighter and stronger package.

Western fir has already replaced white pine to a great extent in the manufacture of doors while cypress and yellow pine are being used for interior finishing and sash and door work. Sugar pine is taking the place of white pine in the match and sash and door industries because of the scarcity of the latter timber,- the sugar

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" Varied uses of Cypress "-- Scientific American. Vol. 63. Pages 262 to 279. July 8, 1907.

pine forests of Idaho having been bought up for future need. Birch, stained, is used as imitation mahogany, and cherry, now nearly gone, is used as a substitute for that wood. Red cedar has become so scarce in the South that old cabins made of these logs have been bought up for pencil wood. Rooky Mountain red cedar, western red cedar, western white pine, alligator juniper, one-seed juniper, redwood, bigtree, incense cedar, yellow cedar, Port Oxford cedar, and western cedar have been tried with varying success as a substitute for eastern red cedar in the manufacture of pencils. Various other substitutions have been tried:- incense cedar for cigar boxes, cypress for plug tobacco boxes and hedge for vehicle material. In the west, eucalyptus has been used with success in some industries instead of the eastern and central hardwoods.

" Eucalyptus a Substitute for Eastern Hardwoods ".-
C. H. Sellers.
Overland Vol. 53. May 1909.

CHAPTER IV.

LUMBER PRICES.

We have considered, to some extent, stumpage values and mill values of lumber and the effect of various factors upon them but now we shall endeavor to take in the whole situation, considering wholesale and retail prices as well. According to census statistics average stumpage values increased a little over 100 per cent between 1899 and 1907, while mill prices increased but 48.8 per cent during the same period and but 38 per cent between 1899 and 1908, there being a decrease in mill prices in 1908 from those of 1907 because of the temporary panic in the fall of 1907. Between 1899 and 1907 wholesale prices of certain kinds of lumber, according to statistics from the Bulletins of the Bureau of Labor, increased 39.2 per cent. Following (page 84) is a table of the average wholesale prices of lumber from 1890 to 1911.

According to these figures, the wholesale prices and mill values of lumber closely coincide as we should expect them to do. It is probable that average retail prices vary from the wholesale more than the wholesale prices vary from the mill values. This would be due to local selling conditions,- demand, competition, pools or price agreements, size of yards, efficiency of buying,

AVERAGE YEARLY WHOLESALE PRICES OF LUMBER.

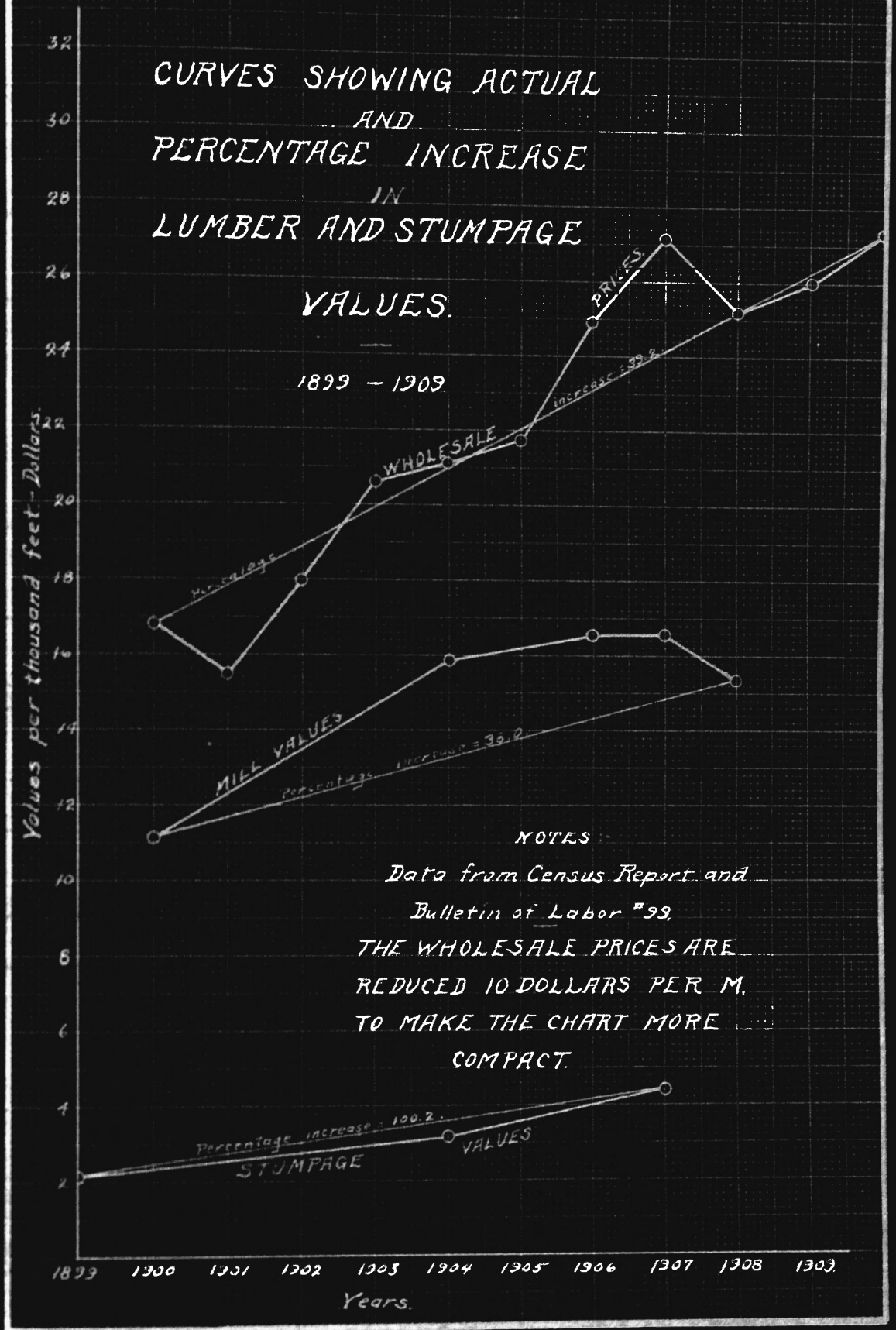
YEAR	Hem-lock M. feet.	Hard maple M. feet.	White oak plain	Yellow pine siding.	Poplar Av. price M. feet	Spruce M. feet.	Average price.
Av. 1890-1899	$11.96	$26.50	$37.43	$18.46	$31.37	$14.35	$23.40
1900	16.50	27.50	40.83	20.71	37.69	17.38	26.80
1901	15.00	26.71	36.77	19.67	36.71	18.00	25.50
1902	15.83	28.58	40.88	21.00	42.10	19.25	28.00
1903	16.79	31.67	44.83	21.00	49.65	19.17	30.60
1904	17.00	31.00	46.50	21.42	50.33	20.50	36.15
1905	17.88	30.50	47.33	24.92	48.21	21.42	31.75
1906	21.90	31.00	50.42	29.33	50.96	25.54	34.90
1907	22.25	32.25	55.21	30.50	58.08	24.00	37.10
1908	20.88	31.63	49.29	30.50	58.29	20.79	35.20
1909	20.58	31.00	48.42	33.04	57.63	25.25	36.00
1910	20.62	31.80	54.25	30.80	61.50	24.60	37.30
1911	20.68	34.32	54.68	30.59	61.59	24. 27	37.70

and others. As yet we have no reliable statistics on retail prices so we cannot calculate the cost of selling and of transportation. This work was started by the Government Bureau in I9II and we may be able to figure these costs when sufficient data have been collected.

Following is a curve showing the fluctuations of prices of stumpage and of lumber, both mill and wholesale. The relative fluctuations can be compared but the relative amounts are not comparable because they are not, in every case, for the same kinds of lumber. The stumpage values and mill prices are comparable to a greater extent than the mill values and wholesale values becausd the average wholesale prices are made up from the average prices of a relatively few items.

The difference between mill values and wholesale prices is caused principally by transportation charges. It costs as much to ship a carload of lumber from west of the Rockies to the Mississippi as the mill value of the lumber. By statistics, it has been shown that freight rates on lumber are higher than on many other commodities. The rates on lumber and some other commodities between Chicago and Kansas City are as follows:

Lumber rate	I6 cents.
Wheat "	I2 " .
Corn "	II " .
Bituminous coal rate	II I/4 cents.
Cement rate	I2 I/2 " .


CURVES SHOWING ACTUAL
AND
PERCENTAGE INCREASE
IN
LUMBER AND STUMPAGE
VALUES.
1899 – 1909
PRICES.
Increase = 39.6
WHOLESALE
Percentage
MILL VALUES
Percentage Increase = 39.2
NOTES
Data from Census Report and
Bulletin of Labor #99.
THE WHOLESALE PRICES ARE
REDUCED 10 DOLLARS PER M.
TO MAKE THE CHART MORE
COMPACT.
Percentage increase = 100.2.
STUMPAGE
VALUES
Values per thousand feet - Dollars.
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
Years.

Practically the same differences apply in all groups for which we have any figures. Many peculiarities exist,- certain kinds of lumber with practically the same shipping qualities as others being discriminated against by a higher rate.

Although affected by some minor factors, the conditions expressed by lumber prices today are due to two great causes:

I. Supply and demand for lumber.

2. Increase in cost due to:

A. Increase in timber costs because of the depletion of the forests.

B. Increase by reason of the labor and supplies entering into the cost.

C. Increase of interest carrying charges and taxes on the investment.

D. Because of closer cutting and increased production of low grade lumber.

Between I880 and I9I0 the increase in population of the United States was 83.4 per cent. For the same period, the consumption of lumber increased I72 per cent and the per capita consumption increased 47.7 per cent. At the same time that this large increase in population and per capita consumption was taking place, our forests

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National Lumber Manufacturers' Association Report-- I9II. Page 58.

were being depleted, the supply of some species was being exhausted without the practice of reforestation or any efforts being made to save our timber resources. This caused the value of timber lands and of stumpage to increase greatly. Not only were these increasing but there was a general rise in prices of all commodities and those used in the manufacture of lumber caused a great increase in the manufacturing costs. At the same time, taxes and interest charges were increasing. More low grade lumber was made because of the scarcity of the better grades of timber and this was made possible by an increase in prices caused by this scarcity.

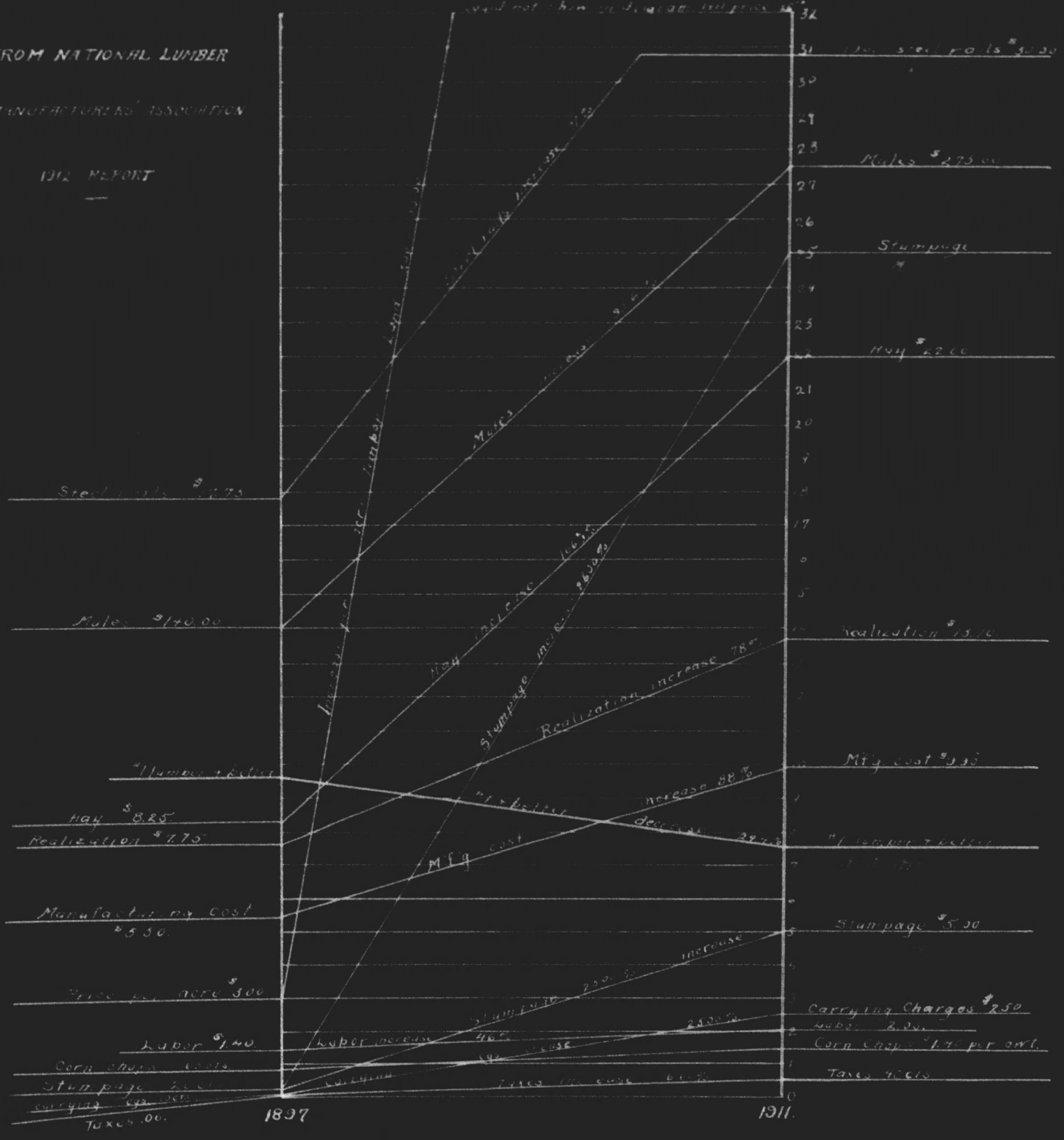
The following chart shows the increase in cost of the various items entering into the manufacturing cost of yellow pine lumber. The percentage of increase of these items is as follows:- timber, 2500 per cent; carrying charges, 2500 per cent; taxes,666 per cent; hay, I66 2/3 per cent; corn chops, II2 per cent; mules, 90.6 per cent; steel rails, 7I per cent; and labor, 46 per cent.

United States Census. Vol. X. -- Manufactures. I905. Pages 567 to 645.

" Lumber Prices "--R. S. Kellogg. I9I2 Report of the National Lumber Manufacturers' Association. Pages I27 to I38.

CHART SHOWING INCREASE IN COST OF VARIOUS ITEMS ENTERING INTO THE PRODUCTION OF LUMBER.

FROM NATIONAL LUMBER MANUFACTURERS' ASSOCIATION 1912 REPORT



The increase in quantity of low grade lumber manufactured because of cutting small timber was 475 per cent. It increased from four per cent of the whole production in I897 to 23 per cent in I9II. With a greater increase in price, this low grade lumber manufacture will probably increase in magnitude. The percentage increase in costs from I90I to I9I2 in the principal items of yellow pine lumber manufacture are here given. Expense includes such items as materials, supplies, taxes, insurance, etc., but not including general expense, sales expense, or interest. It shows again the persistent increase in stumpage values.

	-----Percentage-----			
	I90I	I908	I9II	I9I2
Stumpage -------	I6.9	28.5	34.3	4I.8
Labor -- -------	60.3	44.0	45.0	39.8
Expense --------	22.8	27.5	20.7	I8.5
Total -	I00.0	I00.0	I00.0	I00.0

Expressed in dollars and cents per thousand feet of lumber with the prices as they were in these years, the table would appear as follows:

	-- Manufacturing costs--			
	I90I	I908	I9II	I9I2
Stumpage -------	$I.20	$3.29	$3.24	$4.46
Labor ----------	4.28	5.08	4.26	4.26
Expense --------	I.62	3.I6	I.96	I.96
Total --	$7.I0	$II.53	$9.46	$I0.68

The realization curve which gives the average price received for the lumber, shows an increase from $7.75 per thousand feet in I897 to $I3.74 in I908. This is based on an average size mill of 30 million feet capacity, with a ten year life, or 300 million feet, the figures being furnished by a mill in the Southern Pine region operating under exceptionally good conditions. The results are obtained by using the prices existing in the years taken. They show that the per cent of operating expense to gross realization has increased and the percentage of gross earnings to realization has decreased during the period. The net earnings cannot be calculated unless we know the general expense, sales expense, and interest, the items which the cost figure does not include.

I897.-

300,000,000 stumpage at $0.20 ------		$ 60,000.00
Cost of plant ---------- ----------		I50,000.00
Total investment		2I0,000.00
Realization, I897---	$7.75	
Cost	$.50	
Gross earnings	2.25	
30,000,000 output at $2.25 per thous.		$ 67,500.00
Percentage return		32

I90I.-

300,000,000 stumpage at $I.33 ----		$399,000.00
Cost of same plant ----------		250,000.00
Total investment -----		649,000.00
Realization, I90I---	$9.95	
Cost ---	7.I0	
Gross earnings ---	2.85	
30,000,000 output at $2.85 per thous.		$ 85,500.00
Percentage return		I3.2

I908.-

300,000,000 stumpage at $4.00-----		$I,200,000.00
Cost of same plant ----------		300,000.00
Total investment --------		I,500,000.00
Realization, I908.--	$I3.74	
Cost --	II.53	
Gross earnings --	2.2I	
30,000,000 output at $2.2I per thous.		66,300.00
Percentage return ----------		4.4

I9II.-

300,000,000 stumpage at $5.66 ----		$I,698,000.00
Cost of same plant ----------		350,000.00
Total investnent--------		2,048,000.00
Realization, I9II ---	$I2.9I	
Cost ---	9.46	
Gross earnings	3.45	
30,000,0 0 output at $3.45 per thous.		I03,500.00
Percentage return ----------		5

Mr. Chas. S. Keith, of Kansas City, in an address before the National Lumber Manufacturers' Association in I9I2, said:

> " The rapid growth of the population of this country through immigration and otherwise is continually plunging us into alternate periods of aggressive activity and reaction. In the past, after a period of stagnation, where the industry of the country has been waiting for the march of progress to catch up with the development, we have all too late awakened to find that we have not been alive to the rapid growth and the demand for our commodities at such a time has generally exceeded our ability to supply the same; consequently, we have proceeded on a rush program to increase our capacities to augment the supply in the same ratio as the demand has been increasing but the consuming public have generally awakened before the manufacturer to the difficulty of securing their requirements, and have bought during such times in excess of their needs, thereby greatly stimulating the demand and making it during such periods speculative. We have been

slow to recognize this phase of the situation, and have been prompted to further large increases in our developments to take care of the demand indicated by such purchases, resulting in an overproduction. When demand has again become normal, this overproduction has resulted in wasteful competition.

This leads to:

I. The necessity of consolidation of industrial interests into large enough aggregations to bring about necessary curtailment of production, legislate values, and stop the waste of capital, raw material, and natural resources or enter into trade agreements for the same purpose.

2. To allow this wasteful competition to result in the survival of the fittest.

The first situation, by reason of statutory laws both Federal and State, would be illegal and would only be accomplished, if at all, with the greatest danger, and consequently we are confronted with the second proposition only".

CHAPTER V.

COMBINATIONS IN THE LUMBER INDUSTRY.

The lumber industry includes over 50,000 saw mills, 47,000 firms or companies, 23,000 wood working establishments, and 40,000 retail dealers. It is hard to imagine that a trust in restraint of trade could be formed out of such a vast ownership. The Government lands would counteract any tendency to create a timber trust. One of the best evidences of the nonexistence of a lumber trust is given in some bids made on a Government contract for Manila.

The Government wanted 2,400,000 feet of lumber of various kinds for use in Manila. Bids were solicited and the range of the bids was from $28,816 to $33,163. Here is a difference of approximately $5,000, or something over two dollars per thousand on 2,400,000 feet. Everyone knows that the Government specifications are standard; they cannot vary a great deal and there was no justification for a difference of this amount.

With overproduction and competitive prices of lumber as we have them, it does not seem reasonable that there is a lumber trust composed of the manufacturers and wholesalers. True, we have combinations, the principal one of which is the National Manufacturers' Associa-

tion which is made up of numerous smaller associations. The object of these associations as given by them is to promote friendliness among the lumbermen themselves, to discuss questions and in that way get ideas concerning topics of vital interest to all of them, to give publicity to needed reforms, to standardize lumber, to keep the members conversant with the stocks on hand, selling prices, selling conditions in general, and to fight the railroads in freight rate discriminations.

The Yellow Pine Manufacturers' Association has been designated as a trust by the Government and the Missouri cases are the direct outcome of this. While the increase in prices of yellow pine is no greater than that of other staple commodities, it does seem that this association had some power to regulate the price by a curtailment of the supply, but this power perhaps never reached the point at which the Yellow Pine Association could be called a trust.

The Missouri Ouster Decision was handed down by the Supreme Court of Missouri December 24, 1913, against the thirty-seven companies, or rather a part of them, including retailers, wholesalers, and manufacturers. It was alleged that these companies were in a combination

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" The Trust Question as Relating to the Lumber Industry".- Chas. S. Keith. National Lumber Manufacturers' Association Report--1912. Pages 85 to 177.

to control prices and restrict output. The Ouster has never been enforced and it is probable that it never will be if the companies live up to the law in the future as it is now interpreted.

It seems that the case involved a lot of politics and that the decision was not entirely justifiable from the sworn evidence admitted and from the prices of yellow pine as we know them to have been. To prove that there was no control of prices, the companies submitted a compilation of invoices covering shipments made and orders received, on the I5th. day of January, April, July, and October, of the years I904 to I908 inclusive, of ten different companies, which compilation showed that out of 2,298 cases of duplicate shipments on the same items on the same days, 2,I34 showed a variation in price from 25 cents to $7.50 per thousand, and 95 showed no variation; in other words 95.87 per cent showed variation and 4.I3 per cent showed no variation.

Out of I,095 cases of duplicate sales of the same items on the same days, 909 orders showed a variation while 66 showed no variation. In other words, 94 per cent showed variation and six per cent showed no variation.

The "price list" referred to in the proceedings is a misnomer and should not be understood as a list of prices at which the items were to be sold or were being

sold by all or any of the manufacturers but simply as a market report representing one man's information and judgment as to the general range of values in the entire territory. In addition to its value as a reflection of the trend of prices, the "list" is a convenient basis for making actual quotations between buyer and seller. This method is common in mercantile pursuits. Set out at length in the publication are all the terms as to grades, freight rates and conditions of delivery, so that an offer to sell at so much "off list" and a mere acceptance thereof makes a complete contract containing every essential of certainty as to terms and conditions.

The court maintained that the variation in prices as shown was due to the fact that some manufacturer was "long" on certain items. The lumbermen replied that there were some 17,359 sawmills in the yellow pine industry and only 600 or 700 items on the price lists so that every mill would probably be "long" on some item at all times and would compete with those selling normal stocks of these items. The "long" items, therefore, fix the price. Prices are made to move the overstocked items causing a tendency toward a lower market

The output of the mills in the Yellow Pine Association for the years 1903 to 1909 was, for each year, less than one--third the total output of yellow pine. A res-

restriction of the output of the mills in this association would probably be nearly offset by an increase in the output of the other mills. The prices as shown by the books of the companies mentioned in the suit were as follows:

I904 from $ 9.65 to $II.64.

I905 " I2.25 to I4.03.

I906 " I5.79 to I8.02.

I907 " I5.08 to I8.20.

I908 " I0.5I to I3.98.

The mill values of yellow pine as furnished by the Government were as follows:

I904 average mill price $ 9.96.

I906 " " " I5.02.

I907 " " " I4.02.

0908 " " " I2.66.

It will be seen that the prices as shown by the books of the companies compare very closely with the Government average for the total output.

The Hon. Robert M. Reynolds, special Commissioner of the Supreme Court of Missouri, in his report to the Supreme court, made the following statement:

> " I find that there was no conspiracy, understanding or agreement, expressed or implied, at any time between the defendants among themselves or between any of the defendants with other defendants or with other persons or corporations to sell the product of their mills or their

merchandise at uniform prices, and that there existed free, open, actual, and active competition in the sale of yellow pine lumber between them".

For a full text of the Supreme Court of Missouri Decision see the St. Louis Lumberman for January I, I9I4. pages 7I to 82.

It seems upon an investigation of the whole affair, that the lumber companies were living within the Federal Law but that they were overstepping the laws of the State of Missouri due partially to the fact that the lawyers could not interpret those laws. For this reason and for the reason that politics did enter into the decision, the affair and decision has been called an outrage on the lumber companies.

Combinations of retailers are much more prevalent and perhaps more effective than any combination of wholesalers which has ever existed. The oldest retail lumber association is the Michigan Retail Lumber Dealers' Association which was organized in I888 or I899 as a voluntary unincorporated association and included all dealers in the State who were engaged legitimately in the business with a minimum stock of 75,000 feet. The object of the combination was to prevent wholesalers from selling direct to the consumer. If any did and refused to

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" Combinations of Wholesale and Retail Dealers". Quat. Jour. of Econ. Vol. 26. Pages 630 to 64I. August I9I2.

settle by arbitration, the members were forbidden to trade with that wholesaler. also each retailer of the association who dealt with or sold lumber in carload lots in another retailers territory, was considered a poacher and should pay damages to the retailer injured. The associations are very active in fighting the mail order houses. Each member sends in for figures on a bill of lumber for a certain building and the calculating department of the mail order house is so swamped with work in calculating these decoy bills that its expenses are increased enormously and the service to its real customers is much hindered.

Substantially identical in character and purpose with the Michigan Association, were the Northwestern, the Colorado and Wyoming, and the N ational Retailers' Associations.

Recently the Government has filed Civil suits under the Sherman Anti-trust Law against most of the retailers associations, claiming that they are operating in restraint of trade:

1. By a secret conspiracy not to buy from a manufacturer who sold direct to the consumer.
2. That manufacturers supplying mail order houses had been coerced into refusing to sell to the mail order houses through threats made by the retailers.

On behalf of the retailers, it was urged in answer to the first point that the reputable manufacturer did not sell to the consumer, for it would be inconsistent for a manufacturer to expect a retailer to buy from a competitor and also that the public could be better served by having yards located in various communities, where a great variety of lumber products could be exposed to view. To the second point, they replied that the reputable manufacturer did not sell to the mail order house because if the practice of distributing lumber by the mail order house method was not checked, one of the greatest trusts in the United States would be built up and the mail order houses would manipulate both the manufacturing and the retailing ends of the industry.

It was shown by the evidence of the Eastern Association Cases that there was an absolute agreement to boycott manufacturers who sold direct to the consumer, a printed black list having been distributed by the Secretary of that Association to its members. No such agreement has been found in the case of the Western Association and it claims to be acting in accordance with the Sherman Law. It maintains that if the Government crushes out the retail associations, the logical effect

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January 1914 numbers of the St. Louis Lumberman.

will be to put the retail business in the hands of the mail order houses and a greater trust would be established than the Standard Oil or Tobacco trusts at which the Sherman Law was directly aimed.

Besides the associations of retailers, we have local pooling and selling agreements for the purpose of eliminating cut-throat competition in a single locality or town where the selling conditions are approximately the same for all concerned. Like all pooling agreements, these are not entirely efficient because all the parties seldom live up to the conditions. One dealer will offer special inducements in the way of delivery or credit, another will mix in some of a better grade of lumber than the specifications call for, or, as in some cases with which the writer is familiar, the dealer will give rebates which he calls "gifts" on every large bill of lumber which he sells.

Reasonable trade agreements subject to reasonable regulation would probably be beneficial both to the sellers and to the consumers in the long run. We have seen the resultant wastes of our present system on our forest resources and the corresponding economic losses. This trade regulation should be had from a non-partisan civil service body or commission, composed of men of successful business experience, and not professional office seekers.

Until such changes occur, we must continue as we are, wasting our resources with resulting economic loss, hastening the time when higher prices must result by reason of this waste, and our posterity will suffer from effects, the causes of which we have failed to remedy when we should.

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a. " Timberland Taxation "- Prof. Fred Rogers Fairchild of Yale. p. 65 to 81.

b. " The Problem of Private Forestry "- Henry Solon Graves, Forester. p. 81 to 95.

c. " Lumber Production of the United States ". R. S. Kellogg. p. 95 to 109.

d. " The Coastwise Trade "- W. B. Stillwell. p. I09 to II4.

e. " Uniform Inspection "- R. M. Carrier. p. I20 to I23.

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g. "Insurance and Price Problems "- J. J. Bloedel. . p. I29 to I38.

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l. " Forest Fire Prevention and Control "- E. T. Allen. p. I79 to I88.

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